

WAGE DIFFERENTIALS

The Case of the Unskilled

CARRIE GLASSER, A. M.

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY
IN THE
FACULTY OF POLITICAL SCIENCE
COLUMBIA UNIVERSITY

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PREFACE

THE widening sphere of governmental intervention into matters that have long been left to the operation of free market forces, has stimulated a multitude of inquiries into numerous economic problems. Within recent years the intensified struggle for markets has exposed, perhaps more clearly than ever before, the extent to which different sectors of our economy are in competition with one another. Of greater import is the fact that in order to secure or to maintain their differential advantage over existing or potential competitors, there has been an increased effort on the part of private industry to resort to legislation and governmental sanctions.

Hence, among other things, both the federal and various state governments have been induced to provide for the regulation of wages. The intent of the existing Federal Wages and Hours Act, sponsored by Northern industry and backed by various labor and social groups, was clearly to narrow differential labor costs between the North and the South. In so far as the law is effective, it is also likely that differences in wages among various industries will be altered by this legislation. In many states, minimum wage laws are expected by their proponents to raise the level of earnings of the lowest paid workers in particular industries, and in addition to narrow the gap between the low-wage and higher-wage industries.

Whether or not these laws are desirable for the economy as a whole and likely to benefit those for whom they are designed, is a matter of controversy. While the present essay refrains from entering into this dispute, it submits that the economic consequences of wage legislation are not likely to be understood until more is known about the nature and causes of wage differentials in the labor market. On a modest scale, this is the task the present study sets itself.

The author wishes to acknowledge her gratitude to Professor Leo Wolman and Dr. Eveline M. Burns for their help-

ful criticism of this manuscript. Special acknowledgment is due to Dr. William Madow for his valuable help in planning the statistical sections of the study. My greatest debt is to my husband, Dr. Moses Abramovitz, whose interest did much to bring this study to fruition. However, the responsibility for the substance and opinions herein expressed, lies solely with the author.

CARRIE GLASSER

NEW YORK, APRIL, 1940.

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CHAPTER I

THE PROBLEM OF WAGE DIFFERENTIALS

THE purpose of this study is to investigate certain aspects of the problem of differences in income arising among a homogeneous group of workers. Part I sets the statistical basis for this investigation by describing the patterns of wage differentials among unskilled labor in different industries and geographical areas. Part II has a double function: first, to organize into a general theoretical framework the various factors which bear on wage differentials among a single class of workers, and secondly, to describe in a more concrete fashion the general nature and action of a number of these causal factors. In particular, it attempts to elaborate the nature and influence of imperfect labor mobility.

What is meant by "wage differentials"? Can a statistical investigation of inequalities in income among a homogeneous group of workers throw any light on the general questions raised by the theoretical literature on wage differences? What are the reasons for selecting the wages of unskilled labor for special study? What wages are most appropriate for this purpose? Should one examine rates of wages, hourly earnings, weekly earnings, annual incomes, or all four? The problem has also a number of important spatial aspects. What criteria should be considered in choosing meaningful geographical divisions from which these spatial aspects are to be studied? It is with these questions that the present chapter is concerned.

I. THE MEANING OF WAGE DIFFERENTIALS

Wage differentials may be defined simply as differences in the wages received by various individuals or groups of individuals. These differentials may be temporary or they may persist for a considerable period of time.

Temporary or short-run differentials may be thought of as differences in wages which arise during the course of a single business cycle or during some transitional period in the history of an industry. Since adjustments in the supply of labor among different industries probably take place more slowly in a short period, so defined, than do changes in the demand for labor, temporary or short-run differentials may provisionally be attributed to these fluctuations in industrial demands for labor. Chapter IV is devoted to an examination of these short-run differentials and to their changes.

Wage differentials may be of a more enduring sort either because of persistent differences in the conditions of the demand for or the supply of labor in different industries, or because over a long period of time, adjustments in the supply of labor among industries and places tend to lag behind changes in the demand for labor. It is with the identification of these persistent differentials that certain sections of Part I of this essay are concerned; in Part II an attempt is made to analyze the reasons for the persistence disclosed.

There is, however, a vital limitation upon the kind of wage differences studied here which must be explained. It is a limitation which arises from certain problems in the theories of the distribution of income and resources and of general economic welfare. And in the matter of the relation between economic efficiency and differences in rates of remuneration, one cannot do better than to start from the general thesis elaborated by Professor Pigou.¹

It is clear that the national income of real goods and services—so far as it depends upon the allocation of resources—will be at a maximum when the values of the marginal net value products² of identical units of resources are everywhere equal. Such a condition, as Professor Pigou has demonstrated,

¹ Pigou, A. C., *Economics of Welfare*, 4th edition, pp. 549-551.

² By "marginal net products" is meant the amount by which the receipts of a firm would be increased if a single worker—more strictly, a single labor unit—were added to its labor force.

must obtain where pure competition is universal and where no costs of movement constitute obstacles to the transfer of workers from place to place and from occupation to occupation. With no "costs of movement",³ it must obviously be true that rates of remuneration for workers of equal skill would be everywhere equal. If it should happen, in such a situation, that the marginal value products of workers of the same class were unequal, employers in industries where marginal products were relatively high would find it profitable to bid for additional workers by offering higher wages. And with no costs of movement, workers would respond. Thus marginal productivity would gradually fall in places where it was relatively high and rise in places where it was relatively low. In equilibrium, both marginal net products and wages for workers of equal skill would be everywhere equal. And by an extension of the same argument, it can be shown that, in similar conditions, rates of pay for workers of unequal skill must be proportionate to their marginal value products.

In situations in which firms hold monopoly positions either in the sale of goods or in the purchase of labor, it is no longer true that workers of equal skill would everywhere be paid wages equal to the values of their marginal net products.⁴ But if the economy were free of obstacles to movement of every kind, it would still be true that the wages of workers of equal skill would be everywhere identical.

These propositions, the writer submits, have the following implications for a study of wage differentials. Persistent differentials in wages paid to workers of the same class—or differentials greater than those justified by differences in skill in the case of workers of different abilities—are evidence of an uneconomic allocation of labor.⁵ Such differentials may be con-

3 The full content of this phrase will be set out below, Chapter VI.

4 See Robinson, Joan, *Economics of Imperfect Competition*, Macmillan and Co., London, 1933, Chapters 23, 25.

5 We neglect the unlikely contingency that in an economy in which monopolies exist, marginal net products may be equal, although wages paid are not.

sidered to provide a *prima facie* case for a transfer of workers from the relatively low paid to the relatively better paid industries or areas. But this finding would be subject to rebuttal on two grounds. First, as between two competitive industries, the costs of movement may be greater than the increase in the value of total production to be secured. And secondly, the cause of the relatively low wages paid in certain industries may lie in the operation of monopolistic powers in either the selling of goods or the purchase of labor. In this event, the objective of policy would be to increase production and employment in such areas. But a prerequisite would be the regulation or destruction of the monopoly positions in question.

Now it follows from this discussion that if we are to develop evidence about wage differentials which is relevant to the considerations set out above, the evidence must fall into one of two classes. It must either be evidence of persistent differentials among the wages of workers of equal skill or else it must be evidence of differentials *greater* than those justified by differences in skill. As a practical matter—and this is the limitation of which mention was made above—relevant evidence, or something approximating it, can only be adduced for workers of the same grade of skill. For while it is possible, in the present state of the data, to identify a group of workers of substantially equal abilities, there does not at present exist any meaningful measure of differences in the efficiency of workers of obviously different skills.⁶ Yet only if such a measure existed could data concerning differentials in wages among workers of unequal skills be made relevant to questions relating to the efficiency with which labor is allocated among industries and places.

As a result, the data reviewed in the following chapters deal only with wages paid to one class of workers—the unskilled. Even within this class of workers there can be little

⁶ This is a point which will be supported at length in the discussion of Section 2 of this chapter.

doubt that some differences in skill exist. And this means that at best, our evidence will only be a crude approximation to what might be considered adequate indications in the behavior of wages of the uneconomic distribution of labor resources. Yet the writer believes the data not too crude to have a bearing upon such questions.

But aside from problems of maldistribution of workers, differences in wages have an interest in themselves, for they bear upon questions of inequality of incomes. The analysis of these differences among a particular group of workers as a step towards an understanding of the determinants of differences in wages, is part of the task of this essay.

2. PROBLEMS IN THE CLASSIFICATION OF UNSKILLED LABOR

What is meant by "efficiency" or "equal efficiency" and can this concept be employed as a criterion in classifying workers for an empirical study of wage differentials? "Efficiency" is a value concept which includes more than mere physical skill. It takes into consideration not only scarcity (which is clearly a function of skill) but that scarcity modified by demand. The nature of the work, therefore, is relevant only in so far as it conditions that relative scarcity. "The efficiencies of different types of people is thus determined, not merely by their nature alone, nor yet by their natures in conjunction with the supply price of capital, but by these things together with the state of demand for different sorts of service and the state of individual techniques in various occupations."⁷ In this sense, efficiency is identical with a worker's equilibrium wages in a competitive situation since it is measured by "his net product conceived as marginal, multiplied by the price of that product."⁸

Pigou's definition of efficiency could be used for the purpose of studying wage differentials empirically, if the necessary

⁷ Pigou, *op. cit.*, pp. 589-590. Cf. Marshall, A., *Principles of Economics*, 8th ed., pp. 549-550 and Hicks, J. R., *Theory of Wages*, Chap. IV.

⁸ Pigou, *op. cit.*, p. 550.

data were available. Unfortunately, this is not the case. An alternative method of classifying workers therefore, had to be found. Such an alternative is suggested by grouping workers according to skill. However, even this classification has its own peculiar limitations. Skills are heterogeneous, reflecting such qualities as strength, manual dexterity, reliability, creativeness, etc. It is impossible in the present state of knowledge to determine, for example, what part of the difference in wages between bootblacks and automobile mechanics (or between skilled and unskilled workers) is attributable to difference in skill. This could only be done by using the difference in wages as an index—a type of reasoning obviously circular. For these reasons the scope of this study has been restricted to an investigation of wage differentials within one grade of labor, the so-called “unskilled.” While this classification minimizes to some extent some of the difficulties in analyzing wage differentials among heterogeneous groups of workers, the category of unskilled is not in itself completely homogeneous. This can best be illustrated by examining the categories of unskilled labor which are included in the data used in this study.

The data to be reviewed have been collected by two agencies, the United States Bureau of Labor Statistics and the National Industrial Conference Board. The National Industrial Conference Board defines unskilled labor as those workers for whose jobs “no previous training time is required.”⁹ The Bureau of Labor Statistics employs the term “common” or “unskilled labor” to cover any one “who performs physical or manual work of a miscellaneous character, which requires little or no skill or training beyond the ability to follow specific instructions from a foreman or supervisor.”¹⁰ The similarity

⁹ National Industrial Conference Board: *Wages, Hours and Employment in the United States, 1914-1936*, pp. 17-18.

¹⁰ *Monthly Labor Review*, November 1936, Vol. 43, No. 5, p. 1228. Coombs in his study of unskilled labor uses a similar definition. Common labor is made to mean “the least skilled groups for which industry has need, a certain general level of education, intelligence and coordination of hand and brain being taken for granted.” Coombs, W., *The Wages of Un-*

between these two definitions is evident. The requirement that little or no training is necessary is common to both, while the Bureau of Labor Statistics makes the additional specification that the work be of a physical or manual nature.

The information submitted by the reporting firms apparently is based upon their interpretations of how these definitions apply to their peculiar conditions. One might guess that the specification little or no skill or training is likely to be applied differently in individual cases. In some instances a few hours, or a few days, or even a month may be taken to be the period of time appropriate for learning an unskilled job. And there may be many other variations in interpretation due not only to the difficulties involved in defining skill¹¹ but also to the fact that many different firms are applying this criterion to their individual cases.

We can be quite certain, therefore, that the category of unskilled workers is not entirely homogeneous. Consequently, it is probable that some of the differentials to be observed in the data arise because of differences in skill which are obscured by the classification. It seems clear, however, that it is far

skilled Labor in the Manufacturing Industries of the United States, 1890-1924, p. 16.

¹¹ According to one industrial engineer, "Skill is something which we all talk about but for which there is no standard definition." See F. J. Becvar, "A Method of Grading and Valuing Operations," *Annals of the American Academy of Political and Social Sciences*, March 1922, Vol. 100, p. 13. For further discussion of this point see A. B. Rich, "Analyzing, Grading and Valuing Operations in a Modern Manufacturing Organization," *ibid.*, pp. 19-24. Cf. also, Riegel, *Wage Determination*, p. 31; C. R. Dooley, "Definition and Classification of Occupations," *Annals*, March 1936, p. 51; A. B. Edwards, "A Social Economic Grouping of the Gainful Workers of the U. S.," *Journal of the American Statistical Association*, December 1933, pp. 377-397. It is also important to note Marshall's observation that when "the state of industrial arts" is changing rapidly, what is generally considered skill in one period may be common practice in another. *op. cit.*, p. 206. Other economists are inclined to emphasize the fact that workers' skill is a function of several variables aside from individual abilities such as efficiency of management, layout of firm, steadiness of output, etc. Cf. J. M. Clark, *Economics of Overhead Costs*, pp. 79-83, and Pigou *op. cit.*, Chap. XV and XVI.

safer in the case of the unskilled than in the case of workers of different skills to assume that differences in wages are related to factors other than differences in abilities.

Another important assumption implicit in this analysis should be considered. In examining wage data for persistent differentials and in analyzing the causes of these differentials, it is assumed that there is some transferability of skills between different industries. This involves more than the simple consideration that there is some mobility of labor between industries, for labor mobility may refer solely to transfers of workers among identical jobs. By transferability of skills, we mean that workers are able to perform dissimilar operations in different industries, provided these are of the requisite simplicity. A brief illustration may clarify this point. One part of the data described in this study deals with average hourly entrance rates of unskilled labor in 13 industries. Some of these industries are: Cement, Lumber (sawmills), Public Utilities, and Petroleum Refining. While the actual work required of unskilled labor in each industry (and for that matter within different firms in the same industry) may be different, it is assumed that unskilled workers in the Cement industry could be employed in Petroleum Refining, Public Utilities, etc.

This assumption is not only necessary for the analysis of wage differentials, but it also appears reasonable in the light of general knowledge and observation of conditions in the labor market. Unfortunately, there do not exist at the present time any empirical studies which would allow us to check the validity of this assumption. Only recently have investigators begun to draw up individual job specifications on a large scale. The problem of transferability of skills between different occupations is still to be probed.¹²

¹² The United States Employment Service in conjunction with several State Departments of Labor has begun a study of job specifications. So far the work has been confined to individual industry studies. The problem of making cross-industrial classifications of 'job families' is a matter to be undertaken in the future. See: United States Employment Service "Who Are the Job Seekers," pp. 20-21, and "Filling 9 Million Jobs," pp. 10-11.

3. WAGES APPROPRIATE FOR THE STUDY OF WAGE DIFFERENTIALS

A student interested in analyzing the problem of wage differentials is necessarily faced with the question: what wages are most relevant? Should one consider money or real wages? Are hourly wage rates more significant than hourly, weekly or annual earnings?

The considerations affecting the choice of an appropriate wage yardstick are both statistical and theoretical. Choices necessarily depend on the kinds of questions one wishes to answer as well as on the facilities available. This study raises two central questions: first, are there persistent wage differentials among unskilled labor in the United States, and secondly, if there are, how can they be explained? The choice of data to be used in answering the first question not only depends on the available statistics but also on the answer to the second question. To anticipate the discussion in Part II, the dominant factor giving rise to persistent wage differentials among similar workers appears to be the phenomenon of imperfect mobility of either labor or capital. If this be true, then the following considerations are in order: is labor or capital mobility stimulated by differences in money or real wages? by differences in wage rates, hourly earnings, weekly or annual earnings?

Economic opinion on this question is by no means unanimous. J. M. Keynes maintains the position that "... ordinary experience tells us, beyond doubt, that a situation where labor stipulates (within limits) for a money wage rather than a real wage, so far from being a mere possibility is the normal case. Whilst workers usually resist a reduction in money wages, it is not their practice to withdraw labor whenever there is a rise in the price of wage goods."¹³ On the other hand, Ohlin in his discussion of the movements of factors of production and its effect on the localization of industry, argues that

¹³ Keynes, J. M., *General Theory of Employment, Interest and Money*, p. 9.

"Labor is interested in real wages, i.e., the goods and services the wage can buy, not in the money wage itself."¹⁴ This statement implies that workers make some calculation of the value of money wages, an assumption which is generally implicit in all of neo-classical theory.¹⁵

Since there is no objective way of ascertaining *a priori* whether real or money wages are more important in determining a worker's choice of employment, and since economic opinion based on general reasoning is divided on this issue, it would seem most advisable for the investigator to study both types of wages. However, after a careful examination of the various methods available for determining real wages of unskilled labor, the author concluded that the statistical difficulties were so great that the best results that could be obtained would be subject to a wide margin of error. This was especially evident in estimating geographical differences in real wages. As a result, consideration of real wages has been omitted from this study; the problem of differences in money wages is the task at hand.¹⁶ It should be emphasized that while this will be a substantial obstacle to our efforts to explain wage differentials, it raises no major difficulties in studying the relation between wage differentials and the efficiency of the economy in allocating resources.

14 Ohlin, B., *Interregional and International Trade*, Harvard University Press, 1935, p. 212.

15 Marshall, for example, argued that "The true reward which an occupation offers to labour has to be calculated by deducting the money value of all its disadvantages from that of all its advantages . . . this true reward (is) . . . the net advantages of an occupation," *op. cit.*, p. 73. While Marshall does not state specifically that workers calculate this "true reward", this would seem to be implied since he also argues that mobility of labor tends to equalize "efficiency earnings." Furthermore, it should be noted, Marshall's analysis includes many non-wage factors, and thus goes further than the arguments presented by Keynes and Ohlin.

16 For a discussion of the problems involved in determining real wages, consult Douglas, P. H., *Real Wages in the United States, 1890-1926*, pp. 6-15 and Achinstein, A., "Can Budget and Cost of Living Studies Be Used as Aids in Determining a Differential Wage", *Journal of the American Statistical Association*, March, 1929, pp. 28-39.

There are, likewise, no more reliable ways of determining whether wage rates, hourly, weekly or annual earnings are most significant for the problem of wage differentials. While for the question of efficiency of allocation it is presumably annual earnings which are most important, rates of pay, hourly and weekly earnings can hardly be neglected in considering the causes of differentials. The author has therefore chosen to study all four types of labor incomes. The sources of this information and the limitations of the four types of data are discussed in the following chapters.

4. CLASSIFICATION OF WORKERS ACCORDING TO THE LOCATION OF EMPLOYMENT

Geographical wage differentials are often referred to as differences in wages which appear between separate markets. To economists this phraseology is confusing, for a market is usually defined as "a connected system of purchases and sales (of labor) of identical kind, or so similar that the demand for each one is so tied together that differentials in price are limited but not eliminated."¹⁷ From this point of view it can reasonably be argued that the United States or the whole world is a single market, within which wage differentials for workers of the same skill are "limited but not eliminated." In Chapter II the description of wage differentials among unskilled labor is based on the assumption that the country as a whole is the labor market.

Within the national market there are important subdivisions with differentiating characteristics so that each one affords a framework for study, both as a unit in itself and as a standard of comparison with other subdivisions. The largest of these subdivisions are the two regions, North and South. These, in turn, are composed of districts made up of several States. In the South, they are the South Atlantic States, the East

¹⁷ Clark, J. M., *op. cit.*, p. 459. The more perfect [is] the market "the stronger the tendency for the same price to be paid for the same thing at the same time in all parts of the market. . ." Marshall, A., *op. cit.*, p. 325.

South Central States and the West South Central States; and in the North, New England, the Middle Atlantic States, the East North Central States, the West North Central States, the Mountain and Pacific districts. In Chapter V the data are examined for the purpose of determining whether there are short-run as well as persistent wage differentials within and between each of these subdivisions of the national market.

PART I

STATISTICAL EVIDENCE ON WAGE DIFFERENTIALS

CHAPTER II

PERSISTENCE OF DIFFERENTIALS IN WAGE RATES, HOURLY EARNINGS AND WEEKLY EARNINGS

THE objective of this chapter is to determine whether differentials in average hourly entrance rates, average hourly earnings and average weekly earnings among unskilled labor show a tendency to persist over a long period of time. We shall consider a period to be ' long ' if it extends over several business cycles. Differentials within ' short ' periods—periods having a length of less than a single business cycle—are discussed in a later chapter. In addition, the present chapter is limited to a description of wage differentials in the national market. The problem of geographical variations in wages is dealt with in Chapter V.

The first section of this chapter discusses briefly the sources of the data used in this study. Its purpose is to indicate the manner in which the data are collected, the meaning of terms, and the nature of some of the more important limitations of the statistics. Section 2 in its turn takes up the problem of persistence of wage differentials with respect to wage rates, hourly earnings and weekly earnings.

I. SOURCES OF WAGE DATA

(a) Information about average hourly entrance rates for male common labor has been collected by the Bureau of Labor Statistics for July 1st of each year since 1926. Although the number of reporting firms has varied from one year to another so that the annual samples are not identical, it is believed that year to year comparisons of the data can be made which are not subject to too great an error because of a change in coverage. Up to 1936 the survey covered ten manufacturing industries, three public utilities and general construction. According to the Bureau of Labor Statistics, " the data from

each of the industries are satisfactorily distributed as to geographical location." In 1936, six new manufacturing industries were included in the general coverage. For purposes of this study, however, these new additions have been disregarded because they are available for only two years, 1936 and 1937.

The "entrance rate" is defined as "the lowest rate paid to such common laborers when newly hired . . . no common laborers (are) included who received more than the entrance rate. In computing the average hourly entrance rates for individual industries, the reported entrance rates are weighted by the number of common laborers receiving them in various plants."¹

There is some reason to believe that these rates of wages are to some extent higher than the entrance rates actually received by common laborers. In its 1935 survey, the Bureau of Labor Statistics requested that reporting firms distinguish between common laborers receiving wages "at the entrance rate" and "above the entrance rate." It was found that this resulted in a considerable reduction in the net number of workers reported "at the entrance rate." The Bureau concluded from this that "in many cases employers previously included in their reports all common laborers, whether they were working at the actual entrance rate or at higher rates." For this reason, the reader should bear in mind that the data on rates of wages have some upward bias. However, unless these errors occurred with particular frequency in particular industries or unless the differences between entrance and average rates for common labor varied markedly from industry to industry, the pattern of wage differentials would not be disturbed. Since it is impossible to test the data for this discrepancy, it must be held likely that the pattern of entrance wage rate differentials is subject to some degree of error from this cause.

¹ *Monthly Labor Review*, April, 1937. For a detailed analysis of the technique used, see *ibid.*, April, 1936, pp. 698-699, "Entrance Rates Paid to Common Labor, July, 1935." In Chapter V of the present essay, the geographical representation of this sample is examined in greater detail.

(b) A second and third set of data are the series on average hourly earnings and average weekly earnings of male unskilled labor in 21 manufacturing industries published by the National Industrial Conference Board.² Their survey of wages began in July, 1914. Reported for one month, it was discontinued until June 1920. For this year only 7 months are available. There is complete reporting for each month in 1921, but in 1922 only 6 months, July through December, are reported. From July 1922 to the present time, the data are continuous.

Since it was desirable to obtain a continuous wage series, the July 1914 data have been omitted in the present study. On the other hand, although the data for 1920 and 1922 are not complete, they are included in the analysis because of the importance of these years for the post-war period. The fact that the annual averages of hourly and weekly earnings in 1920 are based on only 7 months data and in 1922 on 6 months data, probably does not involve any serious error for the question of persistence of differentials. It would have been possible to obtain the same results if only one month in a year was taken to represent the annual average, or even if the survey excluded the three years, 1920, 1921 and 1922 and was based on the period 1923-1937. Although the size and character of the industrial sample has changed from year to year due to the failure of some firms to report and the inclusion of new firms, the National Industrial Conference Board maintains that its coverage is sufficiently ample to make the data generally representative. In 1936, for example, 1886 plants reported. The total number of workers in these plants was 1,532,000, or approximately 35 per cent of the total number of workers in the 21 manufacturing industries and about 20 per cent of the total number of workers in manufacturing as a whole.

The data are collected by means of questionnaires. Each reporting firm submits the payroll and employment records

² Wages, Hours and Employment in the United States, 1914-1936, New York, 1936.

of unskilled laborers for the first full week of each month, unless this week is interrupted by a holiday. In this event, the following week is used. For purposes of the present study, it was considered adequate to use only the annual averages of the monthly data as published by the National Industrial Conference Board.

Hourly earnings have been computed by the Board by "dividing the total payroll of each labor group [in this case unskilled labor] by the total number of man-hours worked by that group; weekly earnings are obtained by dividing the total payroll of each labor group by the number of employees in that group."

Since no other agency collects information on average weekly earnings of unskilled labor at regular intervals, it has been impossible to check the National Industrial Conference Board data against other sources of information. The adequacy of this material, nevertheless, can be gauged indirectly. It has been found that the Board's wage series for all wage earners correspond closely with similar data published by the Bureau of Labor Statistics since 1932.³ There is admittedly some tendency for the National Industrial Conference Board's wage figures to be slightly higher, and this has been attributed to the fact that the Board's sample includes a relatively greater number of large firms. It may be reasonable to infer then, that the same bias affects the wages of unskilled labor. If this be true, then differentials between industries may be subject to some margin of error, for the industries with both large and small firms may show relatively high wages compared to industries where firms are uniformly small.

³ Wolman, Leo, "The Recovery in Wages and Employment," *Bulletin* 63, December 21, 1936, National Bureau of Economic Research.

2. PERSISTENCE OF WAGE DIFFERENTIALS IN A SELECTED NUMBER OF INDUSTRIES

Wage differentials may be presented in two ways: as differences in the ranks or order of wages in a number of industries or as differences in the magnitudes of wages. The first approach raises the question: in which industries are wages persistently high or persistently low; the second asks: how great is the actual difference in wages between various industries? It is with the first question that this section is concerned.⁴

Suppose then, for a single year, say, 1929, ten industries are ranked according to the relative level of average hourly earnings paid to unskilled labor in each industry. Of what significance is such a ranking? How accurately does it represent the relative position of each industry? One might reasonably expect that the wage rank of any industry will be different from year to year due to cyclical fluctuations in the economy which affect each industry differently. In fact, given ten in-

⁴ Although it would have been desirable to determine the magnitude of persistent differentials, there is at present no method available which enables us to do so. The problem involved may be indicated by the following illustration. Suppose there are two industries, A, a high wage industry and B, a low wage industry. The differentials in average weekly earnings between unskilled labor in these industries for 5 consecutive years are (in dollars), 2, 4, 3, 5, and 1.

Broadly speaking, the size of these differentials may be attributed to fluctuations in the demand for labor and to changes in the conditions of labor supply in each industry. In the short run, the more active factors differentiating weekly earnings are undoubtedly variations in industrial demands for labor. If, then, the specific influence of changing demand on weekly earnings could be identified and measured, the residual would indicate the size of the persistent differential, that is, that part of the wage difference which arises because of the permanent features of the allocation of labor between the two industries. Or stated otherwise, the persistent differential, if it could be isolated, would indicate that difference in wages which, if it existed, would offer no incentive for workers to shift from the low to the high wage industry so that the differential would be eliminated. The theoretical problems involved in this analysis are discussed at greater length in Chapter VI.

dustries, the rank of any single industry may fluctuate from year to year anywhere from one, the lowest, to ten, the highest.

If the industries paying relatively high wages during years of business expansion were also those in which wages declined most during depressions, and if the relatively low wage industries during 'good' years became the high wage industries during depressions, there would be no significant differences in the *average* ranking of the ten industries. In this situation it would be plausible to conclude that there were no persistent wage differentials. On the other hand, if each industry maintained the same rank during all phases of business cycles, significant differences in the average ranks would emerge. Under these circumstances, it would be evident that wage differentials were persistent.

The problem is then to determine how stable are the ranks which industries hold over a long period of time. Although more refined statistical techniques than those used in this chapter could be applied, the writer believes that the simple tables presented below are adequate for the problem in hand.

(A) PERSISTENT DIFFERENTIALS IN AVERAGE HOURLY
ENTRANCE RATES

Table 1 shows the average hourly entrance rates for male common laborers in 13 industries for July 1st of each year from 1926 to 1937. Table 2 presents the ranks of industries based upon these wage data. The summation of all the ranks for each industry for the entire period is shown in the last column of Table 2. The numbers in the first column indicate the final rank of each industry for the entire period based upon these summations.

From these final ranks it appears that the Lumber industry has the lowest entrance rate, that Brick, Tile and Terra Cotta has the second lowest rate, Foundry and Machine Shops, third lowest, and so forth. An inspection of Table 2 reveals that the final ranks are not always identical with the rank of an industry in any given year. For example, the Cement industry

TABLE 1
AVERAGE HOURLY ENTRANCE RATES (in cents) OF MALE UNSKILLED LABOR, JULY 1ST OF EACH YEAR, 1926-1937
(Source: U. S. Bureau of Labor Statistics)

Industry	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937
All Industries	426	424	448	432	429	403	355	333	420	430	434	514
Automobiles	461	463	572	499	482	577	620	465	549	612	466	546
Brick, Tile and Terra Cotta	407	422	394	378	380	339	289	247	369	382	379	457
Cement	401	392	372	378	379	372	306	295	447	443	440	515
Electrical Machinery	431	442	460	459	448	429	396	371	435	429	*	*
Foundry and Machine Shops	371	378	384	398	390	382	348	318	401	400	425	495
Iron and Steel	427	432	425	425	421	418	318	336	432	441	451	587
Leather	409	414	423	422	419	391	329	316	393	419	422	469
Paper and Pulp	428	425	443	440	432	372	356	626	403	411	413	479
Lumber (sawmills)	336	322	317	320	316	277	215	208	331	356	380	431
Petroleum Refining	479	440	454	457	481	475	421	407	526	522	525	631
Meat Packing	415	417	422	420	418	417	346	323	439	457	456	577
Public Utilities	420	398	429	428	446	446	415	387	418	420	429	468
General Contracting	471	482	474	483	470	426	399	383	455	481	509	563

* Data not available.

TABLE 2
INDUSTRIES RANKED ACCORDING TO AVERAGE HOURLY ENTRANCE RATES OF MALE UNSKILLED LABOR: 1926-1937

Industry	Final Rank	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	Sum
Lumber (sawmills)	1	1	1	1	1	1	1	1	1	1	1	2	1	13
Brick, Tile and Terra Cotta	2	4	7	4	3	3	2	2	2	2	2	1	2	34
Foundry and Machine Shops	3	2	2	3	4	4	5	7	5	4	3	5	6	50
Cement	4	3	3	2	2	2	3	3	3	10	8	7	7	53
Leather	5	5	5	6	6	6	6	5	4	3	5	4	4	59
Paper and Pulp	6	9	8	9	9	8	4	8	7	5	4	3	5	79
Meat Packing	7	6	6	5	5	5	7	6	6	9	10	9	10	84
Public Utilities	8	7	4	8	8	9	11	11	11	6	6	6	3	90
Iron and Steel	9	8	9	7	7	7	8	4	8	7	8	8	11	92
Electrical Manufacturing	10	10	11	11	11	10	10	9	9	8	7	*	*	96
General Contracting	11	12	13	12	13	11	9	10	10	11	11	11	9	132
Petroleum Refining	12	13	10	10	10	12	12	12	12	12	12	12	12	139
Automobiles	13	11	12	13	12	13	13	13	13	13	13	10	8	144

* No data available.

received a final rank of 4, but in 1934 its rank was 10. Similar variations will be observed in the case of each of the 13 industries.

Before the final ranks may be accepted as indicative of persistent differentials, the amount of variation within each industry must be examined. If it is found that the annual ranks show considerable instability, then the final ranks are not significant and the differences between these ranks cannot be taken as evidence of persistent differentials. On the other hand, if the annual ranks are stable, then the presence of persistent differentials may be inferred. Table 2A below shows the range between the lowest and highest rank and the distribution of ranks of each industry with respect to its final rank.

TABLE 2A
DISTRIBUTION OF RANKS OF AVERAGE HOURLY ENTRANCE RATES
OF MALE UNSKILLED LABOR

Industry	Final Rank	Range of Ranks	No. of years in which rank equalled final rank	No. of years in which rank was different from final rank by:		No. of years in which rank was within 2 of final rank
				1	2	
Lumber	1	1-2	11	1	0	12
Brick, Tile and Terra Cotta	2	1-7	6	3	2	11
Foundries and Machine Shops	3	2-7	2	5	3	10
Cement	4	2-10	0	5	3	8
Leather	5	3-6	4	7	1	12
Paper and Pulp	6	3-9	0	3	5	8
Meat Packing	7	5-10	1	4	5	10
Public Utilities	8	3-11	2	2	3	7
Iron and Steel	9	4-11	1	5	5	11
Electrical Mfg.	10	7-11	3	5	1	9*
General Contracting	11	9-13	4	4	4	12
Petroleum Refining	12	10-13	8	1	3	12
Automobiles ..	13	8-13	7	2	1	10

* Data available for only 10 years.

TABLE 3
ANNUAL AVERAGES OF HOURLY EARNINGS (IN CENTS) OF MALE UNSKILLED LABOR: 1920-1937
Source: National Industrial Conference Board

Industry	1920*	1921	1922**	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937
All Industries	529	437	402	443	458	455	461	471	474	486	478	460	400	401	478	494	498	568
Agricultural Implements	598	465	404	450	468	469	486	503	503	512	511	492	431	413	484	529	543	641
Automobiles	578	500	466	496	543	519	523	563	567	576	593	590	521	505	580	607	608	752
Boot & Shoe	463	388	375	367	385	397	404	420	422	438	427	419	373	397	442	449	429	452
Chemicals	549	443	426	477	492	495	521	535	537	543	539	536	486	469	522	556	570	642
Cotton—North	491	380	384	403	418	395	378	372	369	362	355	333	311	341	419	426	429	496
Electrical Mfg.	557	444	372	428	446	459	474	484	489	474	482	482	438	430	502	515	523	614
Foundry & Machine Shops .	551	461	424	469	489	487	490	498	501	507	504	492	434	432	496	513	519	597
Furniture	449	401	364	390	428	428	445	447	457	447	477	417	381	325	397	396	406	458
Hosiery & Knit Goods	486	380	318	356	366	396	379	391	450	385	321	305	336	342	417	411	415	436
Iron & Steel	579	448	409	484	509	495	493	496	495	511	469	422	347	367	468	477	490	632
Leather Tanning and Finishing ...	538	418	405	442	476	481	488	508	508	485	473	437	387	360	454	481	496	533
Lumber and Millwork	460	377	333	369	357	361	382	398	398	398	454	430	417	320	348	440	451	460
Meat Packing	541	461	381	428	455	451	464	469	468	471	478	453	385	391	483	511	499	604
Paint & Varnish ..	553	502	467	494	459	470	465	453	458	476	477	471	450	441	497	513	506	572
Paper & Pulp	540	452	404	442	443	448	448	444	449	450	450	450	395	375	434	442	455	519
Paper Products ...	518	440	409	435	453	458	477	471	464	452	458	450	423	412	477	499	490	509
Book & Job Printing	459	443	451	442	468	448	478	481	478	479	472	486	452	444	472	479	477	498
News & Magazine Printing	602	579	519	540	548	579	476	497	477	486	472	463	425	419	556	519	525	582
Rubber	620	464	482	522	529	535	542	566	591	604	598	553	513	475	576	606	612	681
Silk	514	456	411	472	476	464	467	481	486	493	497	499	451	453	568	633	621	622
Wool	572	449	433	470	472	471	438	442	439	442	444	415	356	373	455	455	462	540

* 7 month average.

** 6 month average.

Ten out of the 13 industries appear to have annual ranks that do not vary by more than 2 from the final rank in more than 9 years, or two-thirds of the period covered. Cement, Paper and Pulp and Public Utilities, are the only industries that show a greater amount of variability. This suggests that the absolute wages paid in each industry fluctuate with changes in general business conditions but that, on the whole, low wage rate industries remain low, and high wage rate industries remain high. We conclude that since the ranks of industries are quite stable over a period of 12 years, differentials in average hourly entrance rates of common labor are persistent.

(B) PERSISTENT DIFFERENTIALS IN AVERAGE
HOURLY EARNINGS

Table 3 presents the data on average hourly earnings of male unskilled labor published by the National Industrial Conference Board for 21 manufacturing industries from 1920 to 1937, while Table 4 shows the ranks of these industries based upon the wage data for the same period.⁵

Differences in final ranks for the various industries are evident. Hosiery and Knit Goods, Cotton-North, Lumber, Boot and Shoe, and Furniture appear to be the 5 industries with the lowest average hourly earnings in the order mentioned, while Rubber, Automobiles, Chemicals, News and Magazine Printing, and Foundry and Machine Shops are the 5 industries with the highest average ranks. It is also apparent from Table 4 that all of the 21 industries show fluctuations in their wage ranks from year to year. As in the case of average hourly entrance rates, it will be necessary to determine how extensive these variations are before the hypothesis that there are persistent differentials in hourly earnings, in the order reflected in

⁵ Although the total number of industries covered by the National Industrial Conference Board is 25, the listed number of industries in Tables 3 and 4 is only 21. This is due to the fact that we have utilized the combined figures for Foundries and Machine Shops which the Board reports for each of 5 subgroups.

TABLE 4
INDUSTRIES RANKED ACCORDING TO ANNUAL AVERAGES OF HOURLY EARNINGS OF MALE UNSKILLED LABOR: 1920-1937

Industry	Final Rank	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	Sum
Hosiery and Knit Goods	1	5	2	1	1	2	3	2	2	6	2	1	1	3	3	2	2	2	1	41
Cotton—North	2	6	3	7	5	4	2	1	1	1	1	2	2	1	2	3	3	3	5	52
Lumber and Millwork	3	3	1	2	3	1	1	3	3	2	8	4	4	2	4	5	6	4	4	60
Boot and Shoe	4	4	4	5	2	3	4	4	4	3	3	3	6	6	10	6	5	4	2	78
Furniture	5	1	5	3	4	5	5	6	7	7	5	13	5	7	1	1	1	1	3	80
Paper and Pulp	6	10	13	9	9	6	7	7	6	5	6	6	10	10	8	4	4	6	8	134
Wool	7	16	12	16	14	13	14	5	5	4	4	5	3	5	7	8	7	7	10	155
Paper Products	8	8	7	12	8	8	9	13	10	9	7	7	9	11	11	11	11	9	7	167
Meat Packing	9	11	15	6	7	9	8	8	9	10	9	14	11	8	9	12	12	12	14	184
Book and Job Printing	10	2	8	17	10	12	6	14	12	12	12	9	15	18	17	10	9	8	6	197
Leather, Tanning and Finishing	11	9	6	10	11	15	15	16	18	18	13	11	8	9	5	7	10	11	9	201
Electrical	12	15	10	4	6	7	10	11	13	14	10	15	14	15	14	16	15	15	15	219
Iron and Steel	13	18	11	11	17	18	18	18	14	15	17	8	7	4	6	9	8	10	17	226
Paint and Varnish	14	14	20	19	18	10	13	9	8	8	11	12	13	16	16	15	13	17	18	239
Agricultural Implements	15	19	8	8	12	11	12	15	17	17	18	18	16	13	12	13	16	17	18	261
Silk	16	7	14	13	15	14	11	10	11	13	15	16	18	17	18	19	21	21	16	269
Foundry and Machine Shops	17	13	16	14	13	16	16	17	16	16	16	17	17	14	15	14	14	14	13	271
News and Magazine Printing	18	20	21	21	21	21	21	12	15	11	14	10	12	12	13	18	16	16	12	286
Chemical	19	12	9	15	16	17	17	19	19	19	19	19	19	19	19	17	18	18	19	310
Automobiles	20	17	19	18	19	20	19	20	20	20	20	20	21	21	21	21	20	19	21	356
Rubber	21	21	18	20	20	19	20	21	21	21	21	21	20	20	20	20	19	20	20	362

TABLE 4A

 DISTRIBUTION OF RANKS IN AVERAGE HOURLY EARNINGS OF
 MALE UNSKILLED LABOR

Industry	Final Rank	Range of Ranks	No. years with rank equal to final rank	No. years in which rank was different from final rank by:			Total within 3 of final rank
				1	2	3	
Hosiery and Knit Goods ..	1	1-6	5	8	3	0	16
Cotton—North..	2	1-7	4	9	1	2	16
Lumber—Mill-work	3	1-8	4	8	4	1	17
Boot and Shoe..	4	2-10	6	6	5	0	17
Furniture	5	1-13	5	2	5	0	12
Paper and Pulp	6	4-13	5	3	4	2	14
Wool	7	3-16	3	1	4	3	11
Paper Products ..	8	7-12	3	8	1	4	16
Meat Packing ..	9	6-15	4	4	3	4	15
Book and Job Printing	10	2-18	2	2	6	0	10
Leather	11	5-18	3	2	4	1	10
Electrical Mfg.	12	4-16	0	2	6	6	14
Iron and Steel..	13	4-18	0	1	3	1	5
Paint and Varnishes ,...	14	8-20	1	5	3	2	11
Agricultural Implements ..	15	8-19	1	1	4	6	12
Silk	16	7-21	2	3	4	3	12
Foundries and Machine Shops	17	13-17	3	6	1	5	15
News and Magazine Printing	18	10-21	1	0	3	6	10
Chemicals	19	9-19	9	2	3	1	15
Automobiles ...	20	17-21	7	9	1	1	18
Rubber	21	18-21	6	9	2	1	18

the final ranks, can be established. Table 4A shows the distribution of ranks in average hourly earnings for the same 21 industries.

Given 21 industries, it is possible for any single industry to vary in rank anywhere from 1 to 21. Since our data cover 18 years, a reasonable test of stability would seem to be the

maintenance of a rank which varies by no more than 3 from the final rank in at least two-thirds of the period covered, or 12 years. From the last column of Table 4A it appears that 15 industries satisfy this requirement. That is, all but 6 industries come within a range of 7 ranks (out of 21) two-thirds of the time. The industries showing the least amount of stability are Wool, Book and Job Printing, Leather, Iron and Steel, Paint and Varnishes and News and Magazine Printing. The evidence seems to support the hypothesis that differentials in average hourly earnings are persistent.

(C) PERSISTENT DIFFERENTIALS IN AVERAGE
WEEKLY EARNINGS

The same positive results are obtained when average weekly earnings of male unskilled labor are tested for the persistence of differentials. In Table 5 the average weekly earnings of unskilled labor in 21 manufacturing industries from 1920 to 1937 are listed; Table 6 shows the wage ranks for each industry for every year together with the final ranks for the entire period. On the basis of these final ranks Hosiery and Knit Goods, Lumber, Cotton-North, Boot and Shoe, Furniture and Wool appear to be a group of industries with relatively low average weekly earnings while Rubber, Automobiles, Chemicals, Paint and Varnishes and Iron and Steel are a group with relatively high weekly earnings.

The reader will observe by examining Table 6 that no industry received a rank equal to its final rank in all the years covered. Since a considerable amount of instability in wage ranks seems apparent, it will be important to determine more accurately the actual amount of variation. To this end, Table 6A below shows the range of ranks for each industry, the number of years in which the annual ranks are identical with the final ranks, and the number of years in which these annual ranks differed by 3 or less from the final rank.

TABLE 5
ANNUAL AVERAGES OF WEEKLY EARNINGS (IN DOLLARS) OF MALE UNSKILLED LABOR: 1920-1937
Source: National Industrial Conference Board

Industry	1920*	1921	1922**	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937
All Industries ...	26.06	20.28	20.30	22.28	22.41	22.93	23.21	23.54	23.89	24.40	21.90	19.18	14.48	14.91	16.42	18.28	19.98	22.48
Agricultural Implements ...	29.61	19.48	19.76	22.43	22.76	23.63	24.39	24.69	25.55	25.88	22.66	17.69	14.27	14.39	18.14	20.85	21.80	25.84
Automobiles ...	27.40	23.30	22.83	24.02	25.57	25.42	26.58	27.63	28.52	28.74	26.04	24.11	18.03	19.52	20.14	23.65	24.70	28.40
Boot & Shoe ...	19.75	18.25	17.95	17.56	18.06	19.20	18.54	19.69	19.46	20.39	17.65	16.74	14.65	15.51	16.43	16.70	16.95	17.91
Chemical ...	26.33	22.25	22.86	25.59	26.20	26.63	27.72	28.82	28.71	28.85	27.14	25.32	20.86	18.22	19.87	21.30	22.78	25.67
Cotton—North ..	23.15	17.51	18.58	19.79	18.93	19.94	19.28	19.69	19.45	19.47	17.77	16.83	14.00	14.49	15.39	16.04	17.25	19.77
Electrical	27.20	19.94	17.93	20.84	21.11	21.96	22.67	22.53	22.77	23.02	22.10	18.72	13.39	14.40	17.15	18.90	21.34	24.15
Hosiery & Knit Goods ...	23.22	18.74	15.78	17.38	16.76	18.38	18.38	19.11	23.72	20.61	14.88	13.68	14.65	14.76	16.15	14.90	14.71	18.98
Iron & Steel	33.48	22.04	23.14	26.26	26.51	27.17	27.15	27.45	28.22	28.75	23.87	18.08	12.42	14.56	12.81	15.28	18.79	22.47
Meat Packing ...	26.15	21.75	19.04	21.24	22.56	22.70	22.88	23.90	23.97	23.98	24.00	22.20	18.72	17.31	19.87	20.85	21.00	24.23
Paint & Varnish .	28.11	24.20	23.52	24.96	23.52	23.56	22.13	22.01	22.91	23.33	21.93	19.75	16.62	17.08	19.46	20.36	21.15	23.69
Book & Job Printing	21.82	20.38	20.98	20.49	21.64	21.38	23.09	22.90	22.58	22.70	21.68	20.74	19.03	18.32	18.38	19.23	19.85	21.13
News & Magazine Printing	20.03	20.16	19.65	21.71	23.24	25.91	21.65	23.34	21.93	22.46	21.74	20.34	18.55	17.29	19.80	18.03	18.90	21.75
Foundries and Machine Shops	27.80	19.97	21.39	23.69	23.54	24.22	24.49	24.49	24.87	25.43	22.09	18.16	12.80	14.11	16.61	18.99	21.18	24.34
Furniture	21.14	17.85	18.11	19.02	20.27	20.96	21.71	21.59	21.48	21.07	19.69	17.23	12.50	11.48	13.83	15.20	17.73	19.30
Leather Tanning and Finishing .	26.08	20.00	19.25	21.26	21.92	22.99	22.90	23.78	23.60	23.04	21.28	18.22	14.19	14.40	16.62	18.60	19.52	19.87
Lumber and Millwork	22.26	18.37	16.58	18.49	17.91	18.21	18.47	18.90	19.35	21.09	18.70	17.00	11.77	12.28	14.92	16.91	18.20	19.24
Paper & Pulp	26.93	21.74	21.22	22.60	21.87	22.71	23.16	22.90	22.66	23.25	22.25	19.83	16.00	15.40	16.00	17.22	18.83	21.27
Paper Products .	25.73	20.51	20.64	22.27	23.14	23.56	24.08	23.73	23.31	23.80	21.62	21.14	18.28	17.86	17.17	18.79	20.82	21.95
Rubber	27.97	21.15	23.05	25.22	25.49	26.13	26.97	28.01	28.91	28.70	25.67	21.99	18.06	16.14	19.60	21.23	23.21	24.63
Silk	23.62	21.69	21.09	24.11	24.55	24.63	24.35	24.42	26.62	26.89	25.16	24.05	18.96	17.89	16.54	16.92	18.27	19.00
Wool	23.72	21.26	21.31	22.68	21.70	21.29	20.68	21.06	20.73	21.19	20.28	19.43	15.28	15.53	15.83	17.28	17.36	19.50

* 7 months average.

** 6 months average.

TABLE 6

INDUSTRIES RANKED ACCORDING TO ANNUAL AVERAGES OF WEEKLY EARNINGS OF MALE UNSKILLED LABOR: 1920-1937

Industry	Final Rank	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	Sum
Lumber and Millwork	1	5	4	2	3	2	1	2	1	1	5	4	4	1	2	3	6	6	4	56
Hosiery and Knit Goods	2	7	5	1	1	1	2	1	2	13	3	1	1	10	9	7	1	1	2	68
Boot and Shoe	3	1	3	4	2	3	3	3	3	3	2	2	3	9	11	8	5	2	1	69
Cotton—North	4	6	1	6	5	4	4	4	3	2	1	3	2	6	7	4	4	3	7	72
Furniture	5	3	2	5	4	5	5	7	6	5	4	5	5	3	1	2	2	5	5	74
Wool	6	9	14	15	14	8	6	5	5	4	6	6	11	11	12	5	9	4	6	150
Electrical	7	15	7	3	7	6	8	9	8	9	9	13	10	5	5	12	13	17	15	171
Leather	8	11	9	8	9	10	11	11	13	12	10	7	9	7	6	11	11	11	8	174
Book and Job Printing	9	4	11	12	6	7	7	12	9	7	8	9	15	20	20	15	15	12	9	198
News and Magazine Printing	10	2	10	9	10	14	18	6	11	6	7	10	14	17	15	18	10	10	11	198
Paper and Pulp	11	14	16	14	13	9	10	13	10	8	11	14	13	12	10	6	8	9	10	200
Paper Products	12	10	12	11	11	13	12	14	12	11	13	8	16	16	17	13	12	13	12	226
Foundry and Machine Shops	13	17	18	16	15	16	15	17	16	15	15	12	8	4	3	10	14	16	17	234
Agricultural Implements	14	20	6	10	12	12	14	16	17	16	16	15	6	8	4	14	18	18	20	242
Silk	15	9	15	13	17	17	16	15	15	17	17	18	19	19	18	9	7	7	3	251
Meat Packing	16	12	17	7	8	11	9	10	14	14	14	17	18	18	16	20	17	14	16	252
Paint and Varnish	17	19	21	21	18	15	13	8	7	10	12	11	12	12	14	16	16	15	14	254
Iron and Steel	18	21	18	20	21	21	20	18	18	20	16	7	2	8	1	3	8	13	256	
Rubber	19	18	13	19	19	18	19	19	20	21	18	19	17	15	13	17	19	20	18	322
Automobiles	20	16	20	17	16	19	17	18	19	19	19	20	20	14	21	21	21	21	21	339
Chemicals	21	13	19	18	20	20	20	21	21	20	21	21	21	21	19	19	20	19	19	352

TABLE 6A

DISTRIBUTION OF RANKS IN AVERAGE WEEKLY EARNINGS OF
MALE UNSKILLED LABOR

Industry	Final Rank	Range of Ranks	No. years with rank equal to final rank	No. years in which rank was different from final rank by:			Total within 3 of final rank
				1	2	3	
Lumber—Mill-work	1	1-6	4	4	2	4	14
Hosiery and Knit Goods....	2	1-13	3	9	0	1	13
Boot and Shoe ..	3	1-11	6	6	3	0	15
Cotton—North ..	4	1-7	5	4	5	4	18
Furniture	5	1-7	8	3	3	3	17
Wool	6	4-15	4	3	3	2	12
Electrical Mfg. ..	7	3-17	2	3	5	1	11
Leather	8	6-13	2	5	3	6	16
Book and Job Printing	9	4-20	3	1	4	4	12
News and Magazine Printing ..	10	2-18	5	3	0	1	9
Paper and Pulp ..	11	6-16	1	5	5	5	16
Paper Products ..	12	8-17	5	7	2	0	14
Foundries and Machine Shops	13	3-18	0	2	4	5	11
Agricultural Implements ...	14	4-20	2	1	5	1	9
Silk	15	3-19	3	1	5	2	11
Meat Packing ...	16	7-20	2	3	6	0	11
Paint and Varnishes	17	7-21	0	3	3	2	8
Iron and Steel ...	18	1-21	3	0	3	4	10
Rubber	19	13-21	6	6	3	0	15
Automobiles	20	14-21	3	9	1	2	15
Chemicals	21	13-21	6	5	5	1	17

In spite of year to year fluctuations in the relative position of each industry, 13 of the 21 industries stayed within a range of 3 ranks from their final ranks in at least two-thirds of the period covered, or 12 years. Since the possible range of variation is from 1 to 21 for any single industry, the amount of stability noted seems significant. Or stated otherwise: if the underlying differences in average weekly earnings of unskilled

labor in the various industries were not of an enduring sort, one would expect that the relative position of each industry would show greater instability than the facts indicate.

Some of the industries, of course, are more variable than others. Paint and Varnishes, for example, shows a wide range of variation, between rank 7 and rank 21; and in only 8 years did this industry come within 3 ranks of its final rank. Electrical Manufacturing, Foundry and Machine Shops, Agricultural Implements, Silk, Meat Packing and Iron and Steel, have a comparable record of relative instability. On the other hand, more than half of the industries covered maintained their relative positions in 12 or more years with slight alteration. One may therefore conclude that differentials in average weekly earnings among unskilled labor in these industries are persistent and are not merely the result of short-run oscillations in business conditions.

(D) COMPARISON OF WAGE RANKS: AVERAGE HOURLY
EARNINGS AND AVERAGE WEEKLY EARNINGS

Is there any significant relationship between the relative levels of average hourly earnings and average weekly earnings in the 21 industries? Unfortunately, because the industries for which average hourly entrance rates are available are not the same as those included in the other two wage series, this comparison cannot be extended to include the ranks in average hourly entrance rates. Table 7 below shows the final ranks of industries for the two comparable wage series.

The comparison is interesting in that it reveals a very close correspondence between the ranks of industries ordered according to hourly and weekly earnings. Furniture and Automobiles have identical ranks in both series. Six industries show an average hourly earnings position not more than one rank different from their ranks based on weekly earnings; for 12 industries the difference between the two ranks is not greater than 2; for 14 industries the difference is not greater than 3 and for 16 industries the difference is not more than 4.

TABLE 7

INDUSTRIES RANKED ACCORDING TO AVERAGE HOURLY EARNINGS AND AVERAGE WEEKLY EARNINGS OF MALE UNSKILLED LABOR: 1920-1937

Industry	Final Rank:	Final Rank:
	Average Hourly Earnings	Average Weekly Earnings
Hosiery and Knit Goods	1	2
Cotton—North	2	4
Lumber and Millwork	3	1
Boot and Shoe	4	3
Furniture	5	5
Paper and Pulp	6	11
Wool	7	6
Paper Products	8	12
Meat Packing	9	16
Book and Job Printing	10	9
Leather	11	8
Electrical Mfg.	12	7
Iron and Steel	13	18
Paint and Varnishes	14	17
Agricultural Implements	15	14
Silk	16	15
Foundry and Machine Shops ...	17	13
News and Magazine Printing ..	18	10
Chemicals	19	21
Automobiles	20	20
Rubber	21	19

The widest discrepancies appear in the case of Meat Packing, Electrical Manufacturing, News and Magazine Printing, Iron and Steel and Paper and Pulp, where the difference between the two ranks is greater than 4.

The relationship between the two sets of ranks can be measured in a more precise fashion by computing the rank difference correlation coefficient.⁶ By applying the appropriate

⁶ The formula for the rank difference correlation coefficient is $r = \frac{1 - 6 \sum d^2}{p^3 - p}$, where d is the difference between the two paired ranks and p is equal to the number of paired ranks. The formula testing the significance of r is $t = \frac{r}{\sqrt{1 - r^2}} \cdot \sqrt{n - 2}$, where r is the correlation coefficient, and n is the number of paired observations. Cf. Fisher, R. A., *Statistical Methods for*

formula to Table 7, we find that the correlation coefficient has a value of .785, which suggests that there is a marked positive association between the ranks of hourly and weekly earnings. However, before accepting this relationship as significant, the reliability of the correlation coefficient must be established, that is, the probability that the results of the correlation are due to chance. In the present case, the probability that the degree of association we have observed is due to chance, is about 1 out of 200. It is clear then that industries in which average hourly earnings for male unskilled labor are persistently low are by and large also those in which average weekly earnings are low; and similarly, industries with high average hourly earnings are, for the most part, industries paying high average weekly earnings.

In connection with this marked historical association between hourly and weekly earnings, it is interesting to discover what differences there are among industries in hours worked per week. We shall follow the procedure used above. It will first be necessary to establish whether there are persistent differentials in average weekly hours. A second step will be to measure the degree of relationship between differentials in average weekly earnings and the differentials in average weekly hours of work.

The annual average number of hours per week for each industry for the period 1920 to 1935 were ranked in the same manner as that followed in ranking the wage data.⁷ A summary table showing the final rank of each industry, the range of ranks, and the number of years in which each industry

Research Workers, pp. 179-180 and Friedman, M., "The Use of Ranks to Avoid the Assumption of Normality Implicit in the Analysis of Variance," *Journal of the American Statistical Association*, December, 1937, Vol. 32, p. 694.

⁷ The data on hours are derived from the same source, the National Industrial Conference Board. Average hours per week per unskilled wage earner are computed by dividing the total hours worked in a given week by the total number of workers employed during that period. In this case, the annual averages are used.

TABLE 8

DISTRIBUTION OF RANKS IN AVERAGE WEEKLY HOURS OF MALE UNSKILLED LABOR

Industry	Final Rank	Range of Ranks	No. years with rank equal to final rank	No. years in which rank was different from final rank by:			Total within 3 of final rank
				1	2	3	
News and Magazine Printing	1	1-18	10	0	2	0	12
Boot and Shoe	2	1-15	2	5	1	1	9
Electrical Mfg.	3	2-15	0	3	1	5	9
Rubber	4	3-14	3	3	5	0	11
Furniture	5	2-14	2	5	1	2	10
Leather	6	2-15	0	4	3	3	10
Wool	7	2-17	2	3	2	3	10
Book and Job Printing	8	2-20	0	3	2	4	9
Lumber—Millwork ..	9	2-18	2	2	0	2	6
Foundries and Machine Shops ...	10	1-19	2	1	2	3	8
Automobiles	11	5-17	2	3	1	4	10
Agricultural Implements	12	2-18	0	5	2	1	8
Hosiery and Knit Goods	13	3-20	0	1	1	2	4
Paint & Varnishes ...	14	7-20	0	2	3	1	6
Cotton—North	15	2-20	0	2	1	1	4
Silk	16	1-21	1	0	2	6	9
Paper Products	17	9-20	3	5	3	1	12
Meat Packing	18	11-21	0	2	1	5	8
Paper and Pulp	19	12-19	1	3	3	2	9
Iron and Steel	20	1-21	2	10	0	0	12
Chemicals	21	9-21	2	5	2	0	9

received a rank equal to or within 3 of its final rank, is presented in Table 8.

Quite unlike the wage data, differences in average weekly hours do not appear to be very stable. Thirteen of the 21 industries fail to maintain a rank within 3 of their final ranks in at least two-thirds of the period covered; only 8 industries show a degree of stability that may be considered significant by that criterion. It will also be noted that the range of variation for each industry is considerable and that in the case of 8 industries, a rank equal to their final, or average, ranks was

never achieved. It seems much less likely, therefore, that differentials in weekly hours among the 21 industries are persistent. The observed annual differences in weekly hours may consequently be attributed to shorter-run changes in the business economy which are constantly being offset, at least to a large extent.

The relationship between differentials in average weekly hours of work and average weekly earnings is shown in Table 9 below. For this purpose, the final ranks of all 21 industries are used.

The reader will observe that 3 industries have low ranks (a rank of less than 10) in both series. These industries are Boot and Shoe, Furniture and Wool. On the other hand, 7 industries show relatively high ranks with respect to both hours and weekly earnings. This group includes Foundries and Machine Shops, Automobiles, Agricultural Implements, Paint and Varnishes, Silk, Iron and Steel and Chemicals. For these 10 industries, one may infer that the low weekly earnings in 3 industries are the result of both low hourly wage rates and short weekly hours and that the relatively high weekly earnings in 7 industries are the result of high hourly wage rates and long weekly hours.

More than half of the industries, however, reveal no such uniformity. News and Magazine Printing and Rubber, for example, have relatively high weekly earnings but low weekly hours. This suggests that hourly wage rates in these two industries are high enough to compensate for the relatively short work week. On the other hand, the long work week in Cotton-North and Hosiery and Knit Goods do not seem to be long enough to raise their relative levels of weekly earnings.

Since a considerable amount of variation is evident in the above comparisons, one would expect that any measure of relationship between average weekly hours and average weekly earnings, would not be very large. In fact, when a rank difference correlation coefficient is computed from the data in Table 9, it is found to a value of only .308. This summary

TABLE 9
COMPARISON OF FINAL RANKS; AVERAGE WEEKLY HOURS AND AVERAGE
WEEKLY EARNINGS OF MALE UNSKILLED LABOR

Industry	Ranks: Average Weekly Hours	Ranks: Average Weekly Earnings
News and Magazine Printing	1	10
Boot and Shoe	2	3
Electrical Manufacturing	3	7
Rubber	4	19
Furniture	5	5
Leather	6	8
Wool	7	6
Book and Job Printing	8	9
Lumber and Millwork	9	1
Foundries and Machine Shops	10	13
Automobiles	11	20
Agricultural Implements	12	14
Hosiery and Knit Goods	13	2
Paint and Varnishes	14	17
Cotton—North	15	4
Silk	16	15
Paper Products	17	12
Meat Packing	18	16
Paper and Pulp	19	11
Iron and Steel	20	18
Chemicals	21	21

expression reflects the differences between the ranks of weekly hours and those of weekly earnings which we have previously noted.

The relative instability of industries ranked according to average weekly hours suggests that the differences in hours are comparatively small. Under these circumstances it is possible for a great deal of variation in the ordinal positions of the various industries to occur from one year to another. The actual amount of dispersion in weekly hours and average hourly earnings of unskilled labor for each year from 1920 to 1935 is shown below in Table 9A.

On the average the dispersion in hourly earnings was more than 35 percent greater than the dispersion in weekly hours

TABLE 9A
COEFFICIENTS OF VARIATION: AVERAGE WEEKLY HOURS AND AVERAGE
HOURLY EARNINGS OF UNSKILLED LABOR, 1920-1935

Year	Coefficients of Variation (Percent)	
	Average Weekly Hours	Average Hourly Earnings
1920	8.8	9.2
1921	6.9	10.3
1922	6.7	11.4
1923	5.8	10.8
1924	6.9	10.2
1925	5.0	10.8
1926	4.6	9.5
1927	4.6	10.5
1928	5.8	10.2
1929	5.8	11.2
1930	6.2	12.9
1931	8.8	13.4
1932	13.1	13.9
1933	8.9	11.8
1934	8.7	10.2
1935	8.0	12.4
Average 1920-1935	7.2	11.2

of work and in no year was the variation in weekly hours less than that in hourly earnings. This is consistent with the observed high correlation between hourly and weekly earnings for in the absence of marked differences in the length of the work-week, industries paying relatively high hourly earnings are likely to be those in which weekly earnings are high. On the other hand, in industries where hourly earnings are low weekly earnings are also likely to be low.

3. SUMMARY

This chapter has tried to establish the hypothesis that differentials in wage rates, hourly earnings and weekly earnings among unskilled labor persist over a long period of time and that while shorter-run changes in business conditions affect the relative position of any given industry in a given year, the

longer-run differential relationship among industries remains stable. To test this hypothesis the data were ranked and the degree of variation within the ranks of individual industries was examined. In the case of all three wage series it was observed that most industries maintained a rank equal to or within close range of its final or average rank in more than two-thirds of the period covered. In the writer's opinion, the evidence is sufficiently adequate to justify the conclusion that differentials in the three wage series are of a persistent and enduring nature.

The same cannot be said concerning differentials in the average number of hours worked by unskilled labor in the various industries. The ranked data on hours show considerable instability within each industry and among the various industries. For this reason, it seems highly improbable that the differentials in weekly earnings are the result of differences in the length of the work-week. Persistent differences in wage rates for unskilled labor in the different industries would therefore appear to be the dominant factors accounting for the observed differences in weekly earnings.

CHAPTER III

DIFFERENTIALS IN ANNUAL EARNINGS

I. INTRODUCTION

IT has so far been established that there are persistent differentials in average hourly entrance rates, average hourly earnings and average weekly earnings of unskilled labor. A fourth aspect of the problem of wage differentials remains to be explored: are there differentials in annual earnings among unskilled workers? Are these differentials persistent? Do differences in annual earnings among the various industries bear the same relation to each other as do the observed differences in average hourly earnings? To what extent do inequalities in employment risks compensate for or offset the effect of differences in average hourly and average weekly earnings? The present chapter attempts to deal with these questions.

An initial difficulty must be faced at the outset. At the present time there are no data on annual earnings of unskilled labor in manufacturing industries which extend over a long period of time. In order to derive such information, it has been necessary to utilize employment statistics referring to all wage earners as a basis for estimating annual earnings of unskilled labor. The method used for this purpose is first described in some detail in Section 2 of this chapter. A comparison is here made with the techniques developed by Paul Douglas and Leo Wolman and Meredith Givens in treating the same problem. The limitations of their approach as well as the method adopted in this study will be set out. The data on annual earnings in 20 manufacturing industries are then reviewed in Section 3. This section follows the general outline of Chapter II: the data are tested to determine whether the observed differentials are persistent or whether the differences within industries over a period of time are greater than the differences between industries. The relationship of 6 variables to differentials in annual earnings is examined in Section 4 in an effort to throw some

light on the nature of underlying causal factors that give rise to persistent differences in annual earnings.

2. THE PROBLEM OF ESTIMATING ANNUAL EARNINGS WITH ALLOWANCE FOR UNEMPLOYMENT

If all workers were of the same skill and adaptability and if industrial practice did not concentrate the available employment upon some of the men, leaving others with relatively less employment, then presumably the annual earnings of all men having employment in a given industry would be the same. A comparison of average annual earnings would then show the differentials between the earnings of men in one industry as compared with another *in so far as their earnings came from employment in the industries in question*.

This qualification introduces an important limitation of this method, as well as of any other that has been utilized in dealing with the same problem. It would be most desirable to have data showing the total earnings from all sources received by workers in different industries. Unfortunately, no existing statistics of this kind throw any light on this point and consequently this deficiency sets limits on the significance of comparisons of average annual earnings in different industries. Nor is there any way of determining statistically how important this factor is for each industry. There is a presumption that it may be of some significance for a few highly seasonal industries, for example, Automobiles, where workers may regularly count on employment in other industries to supplement their incomes obtained from the Automobile industry. However, in other highly seasonal industries, such as Clothing or Rubber, no such alternative may be open to the workers attached to these industries.¹

Another important subject on which but little information is available, is the distribution of annual incomes within each

¹ Cf. Kuznets, Solomon, *Studies in Income and Wealth*. By the Conference on Research in National Income and Wealth, Vol. I, pp. 318-19, National Bureau of Economic Research, New York, 1937.

industry. It is conceivable, for example, that while the average annual earnings of all workers in industry A are higher than in industry B, the lowest incomes in industry A may be considerably lower than the incomes for the same group of workers in industry B. Until such information becomes available, it is necessary to assume that the distributions of annual incomes in all industries are identical, or at any rate, since the nature of these annual wage distributions are unknown, the student has no alternative but to recognize this area of ignorance as a limitation of importance for a study of wage differentials.

A final and most perplexing question is: what workers shall be counted in constructing the average annual incomes for different industries? The relevant category would seem to be, those men who habitually look to an industry for the major part of their livelihood. The usefulness as well as some of the limitations of this definition should be clearly understood. First, as we have already suggested, some workers may be employed in more than one industry. Secondly, this definition does overcome the difficulty of using only the average number of men employed in an industry, for if this number were used, it is clear that no account would be taken of a substantial amount of unemployment in each industry. In other words, the latter method would only show the average annual earnings of *employed* workers with no allowance for unemployment, except in so far as this number included part-time workers. Thirdly, the definition excludes those persons who are merely drifters or get employment in an industry for only a short time, since only those who habitually seek employment in a given industry are counted as "belonging" to that industry.

In view of these considerations, it was considered desirable to include only those persons who keep themselves in a position to secure work in an industry, and in this sense, we can speak of them as being "attached" to an industry. On the basis of these assumptions, the following problems are examined: (a) the estimation of the total number of workers attached to an industry and the average annual rate of unemployment in each

industry, and (b) the estimation of annual earnings of unskilled workers after allowance is made for unemployment.

(A) ESTIMATION OF THE TOTAL NUMBER OF WORKERS
ATTACHED TO AN INDUSTRY

It will clarify this discussion to begin by examining the methods used by Paul Douglas and by Leo Wolman and Meredith G. Givens in estimating the number of workers attached to industries. Although their major problem differed somewhat from that faced in this study, (Douglas is concerned with workers in manufacturing and transportation as a whole, while Wolman and Givens treat all manufacturing) the methods used in computing the numbers of attached workers follow a similar pattern.²

*I. Douglas' Method of Estimating the Number of Wage
Earners Attached to Manufacturing and Transportation*

Taking the Censuses of Occupation for 1890, 1900, 1910 and 1920 as his basic data, Douglas selected from this material the number in those occupations which he considered "attached" to manufacturing and transportation. Interpolations were then made for the inter-censal years by dividing the data into two groups: native and foreign-born workers. It was assumed that the native-born workers increased in the inter-censal years by equal annual increments. For the foreign-born group, the increase in any given year was determined according to the proportion which the immigration of that year bore to the total immigration for the decade. In this way a normal labor supply was estimated.

A second step was to determine the average number employed for the same period. Using data collected by a number

² Douglas' method is outlined in Chapter XXIV of his study on Real Wages in the United States 1890-1926. The Wolman-Givens technique is presented in Recent Economic Changes, pp. 469-478 and by Givens, Meredith G., "Measurability of Unemployment and Related Trends" in *Journal of the American Statistical Association Proceedings* March, 1929, pp. 33-41. Cf. also Kuznets, Solomon, *op. cit.*, pp. 320-324.

of states, the Bureau of the Census and the Bureau of Labor Statistics, Douglas obtained the average annual number employed in manufacturing and transportation. It was then observed that the number employed exceeded the estimated number of wage earners attached in 6 years: 1902, 1903, 1906, 1907, 1919 and 1918. Douglas explains this apparent inconsistency in the following terms:

"This apparent contradiction is caused by the fact that the estimates of the labor supply . . . cover merely the *normal* long-time rates of growth or change. During periods of great business prosperity, when the discrepancy appears, there is undoubtedly an abnormal rate of increase in the labor supply for urban industries. This influx comes from two main sources, namely, from the farms and from the reserve of labor within working-class families."³

A correction is then made of the estimated normal long-time labor supply by ". . . applying to the numbers who were employed in these years, the ratio which the employed bore to the total labor force. This ratio was 100 minus the estimated percentage of unemployment. Thus in 1902, the numbers employed in manufacturing and transportation were 6,684,000 and the percentage of unemployment was . . . estimated at 3.5; the corrected estimate of the labor supply was then built up by multiplying 6,684,000 by $\frac{100}{96.5}$ giving a result of 6,926,000."⁴

Douglas' estimates of the percentages of unemployment are taken from two sources. For the years 1902, 1903, 1906, 1907, 1916, 1917, and 1918, the percentages of unemployment are based on the percentage of trade unionists unemployed in Massachusetts, 3.5 percent for each of the above years. For 1905 and 1919, Douglas assumed a slightly higher percentage of unemployment, 4 percent. For the period 1920 to 1927 his estimates of unemployment are taken from Wolman and Givens' computations, to be described below. The reader will note that in

³ *Op. cit.*, p. 440.

⁴ *Op. cit.*, p. 443.

order for Douglas to obtain his estimates of the number of workers attached to manufacturing and transportation in the years enumerated above, it was not necessary to compute the "normal long-time labor supply." By estimating the average number employed in a year and then by building up this figure by some ratio representing the proportion that the employed bore to the total labor force (determined indirectly by finding the percentage unemployed), the total number of "attached" workers could be estimated.

Douglas' method does not seem to be unreasonable *a priori*, but clearly the reliability of his estimates depends to a large extent on the accuracy of his estimates of unemployment. Since we are interested in the period after 1920, his estimates of unemployment for the years preceding 1920 will not be reviewed. We shall here be concerned with the estimates of unemployment developed by Leo Wolman and Meredith Givens for the period 1920-1927.

II. The Wolman-Givens Method of Estimating the Number of Workers Attached to Industry

Wolman and Givens define the volume of unemployment "as the difference between the number of persons actually employed and the number desiring and habitually dependent upon employment."⁵ The average number of persons actually employed in manufacturing industries was based on the Census of Manufactures reports for 1921, 1923 and 1925. Interpolations were made for the inter-censal years, although the exact method used is not revealed. The number of wage earners attached to manufacturing was taken from King's estimates made in connection with his study of national income. "Substantially, King's estimates of the numbers attached to industry are made wherever possible by discovering the highest month of employment for each year of prosperity and inflating this figure by an arbitrary percentage to allow for illness and other known factors. As the number of persons re-

⁵ *Op. cit.*, p. 469.

quired in any group declines, as evidenced by lower maximum employment during a given year than in some preceding year, the estimated number attached to such a group is decreased only when increases in other groups may be made sufficient to account for the estimated total gainfully-occupied population.”⁶

It is obvious that since estimates of unemployment for the United States must still⁷ be derived indirectly from employment data, these estimates will be subject to certain limitations. This is true not only of the Wolman-Givens method, but also of the method to be used in this study. The Wolman-Givens technique is probably most nearly adequate for measuring unemployment at the peak of the business cycles they studied but underestimates, as the writers admit, the amount of unemployment in years of recession and deep depression.⁸

Depression unemployment is underestimated by the Wolman-Givens methods (and the one to be used in this study) for it excludes (a) first job-seekers, (b) workers who are re-entering employment and (c) those workers who have been

6 Givens, M., *Journal of the American Statistical Association*, *op. cit.*, p. 34-35. While Wolman and Givens adjusted King's estimates for the entire population to include increases due to women entering industry, allowances for migration from farms to cities, etc., these adjustments do not seem to have changed King's estimates of the number attached to manufacturing as a whole.

7 The introduction of social security legislation in this country promises to yield more exact information on this point in the future. However, for information concerning unemployment in the past, the economist will still be forced to rely on estimates.

8 There is some presumption that in the peak month of a business cycle up to 1929, the number of wage earners attached to industry can be represented, roughly, by the number of wage earners employed in that month, inflated to take account of such factors as illness, vacations, etc. This assumes, of course, that there is approximately full employment in these months. However, full employment of this sort in the 1936 or 1937 peak was probably not realized. It is possible that future business cycles will be accompanied by peaks in employment but also that there will be a substantial carryover of depression unemployment, *i.e.*, increases in employment opportunities may lag behind increases in the labor supply. For this reason, as we shall later indicate, it may not be advisable to extend this method of estimation beyond 1931.

without employment for a considerable length of time. Since these three groups may not have been employed in the peak month of a good business year, the number of workers attached to industry are underestimated by that amount.

Neither Douglas nor Wolman and Givens attempt to estimate the number of workers attached to individual manufacturing industries—the task undertaken in this study. Although the method we shall use varies somewhat from their approach, the initial idea is found in their research. However, many of the strictures pertaining to their method are not important for the question of differentials in unemployment and earnings. This point is referred to again in the ensuing discussion.

III. The Method Used in This Study for Estimating the Number of Workers Attached to 20 Manufacturing Industries

The general method is to assume that the secular trend of the number of workers attached to individual manufacturing industries follows the secular trend of employment.⁹ It is also assumed that at cyclical peaks all those “attached” are employed,¹⁰ and we therefore establish the secular trend by connecting the cyclical peaks. The steps followed in deriving these estimates can be outlined briefly:

(1) The index numbers of monthly employment for the 20¹¹ manufacturing industries examined in Chapter II were

⁹ While this assumption may not be completely valid, the error involved is probably not very great. Unless the trends in unemployment were completely unrelated to the trends in employment, one would expect a close correlation over a long period of time between the number of workers attached to an industry and the number unemployed.

¹⁰ No attempt is here made to adjust these estimates of the numbers attached at the cyclical peaks to include those persons absent from their jobs due to illness, job shifting, etc., because of the difficulty in determining the amount of unemployment involved. The number of workers attached to particular industries is therefore under-estimated by this unknown amount, but there is no reason to suppose that this is substantially greater in one industry than another.

¹¹ One industry has been dropped in this chapter, Cotton-North, because of the difficulty in collecting employment and payroll data for this classification.

plotted for the period January 1923 through December 1931. For 17 industries, the employment indices used are those published by the Bureau of Labor Statistics. For 3 industries (Electrical Manufacturing, Paper Products, and Paints and Varnishes), no Bureau data are available so that it was necessary to use the indices compiled by the National Industrial Conference Board. After a careful comparison of the employment indices published by the two agencies for 17 industries, it appeared that the two series were quite similar. It therefore seemed justifiable to use the National Industrial Conference Board data where no Bureau of Labor Statistics information was available. While it would have been most desirable to extend this survey back through 1919, it was impossible to do so because data for earlier years are available for only a few industries.

(2) The number of workers employed in the peak months of the peak years in each industry was taken to represent the number of workers attached to each industry in those years. In this way, both the cyclical as well as the seasonal peaks in employment were identified. Even at this time, as we have already suggested, there is some unemployment due to general absenteeism and to shifting from job-to-job. By not taking this into account, the levels of attached workers in all industries are somewhat underestimated and consequently, the levels of annual earnings will be uniformly higher than if all workers attached to the various industries were included. This, however, would not seriously affect the differentials between industries.

(3) A straight line was then drawn connecting the peaks of employment in each industry. The index number representing the number of workers attached to each industry in the intervening years was then read off the graph. For the non-peak years, the reading was taken for the middle of the year, July. In this way, annual index numbers marking the secular trend in the number of workers attached to the various in-

TABLE 10
PEAK MONTHS AND PEAK YEARS OF EMPLOYMENT IN 20
MANUFACTURING INDUSTRIES

Book and Job Printing	Jan. 1924	Dec. 1926	Dec. 1929
Automobiles	Feb. 1924	Oct. 1925	April 1929
News and Magazine Printing ..	Dec. 1923	Dec. 1926	Dec. 1929
Lumber Products	July 1923	Aug. 1926	Aug. 1929
Meat Packing	Dec. 1923		Jan. 1929
Paint and Varnishes	April 1923	July 1926	June 1929
Rubber Products	April 1923	Aug. 1925	May 1929
Boot and Shoe	March 1923		Sept. 1929
Silk and Rayon	April 1923	Dec. 1925	April 1929
Wool	May 1923	Feb. 1927	Oct. 1929
Agricultural Implements	March 1923	Feb. 1926	April 1929
Chemicals	March 1923	Oct. 1926	Oct. 1929
Electrical Mfg.	Nov. 1923	Jan. 1926	Oct. 1929
Foundries and Machine Shops	June 1923	March 1926	June 1929
Paper and Pulp	April 1923	May 1926	Nov. 1929
Paper Products	April 1923	Aug. 1926	Nov. 1929
Hosiery and Knit Goods	April 1923	March 1926	Oct. 1929
Iron and Steel	June 1923	April 1926	Sept. 1929
Furniture	March 1923	Oct. 1926	Oct. 1929
Leather	Feb. 1923	Nov. 1927	Oct. 1929

dustries were obtained. The peak month and peak years for each industry are shown in Table 10.

(4) It has been assumed that the number of workers attached to the various industries in 1930 and 1931 was the same as the number attached at the peak in 1929. The reasons for doing so can be set forth briefly. It was considered desirable to include in the time period surveyed at least part of a major depression. Since 1924 and 1927 were for many industries years of only minor recession, 1930 and 1931 were included to meet this requirement. Two methods appeared available by which the number of workers attached to the 20 industries in 1930 and 1931 could be estimated. First, the peak of 1929 could be connected with the following peak, which in some industries came as late as 1935 or 1936 or 1937, or secondly, the reading for 1929 could be taken to apply to 1930 and 1931. The first method was discarded because of the length of

time elapsing between the two peaks, and also, because there was reason to believe that at the second peak, full employment or approximately full employment of all attached workers could not be assumed with any assurance. A third consideration was that the long depression undoubtedly invoked drastic shifts in the allocation of labor so that the possibility of major changes in the attachments of workers to different industries could not be disregarded.

By utilizing the second method, whereby the number of workers attached to various industries is assumed to be the same in 1929, 1930 and 1931, unemployment is probably underestimated to some extent for 1930 and 1931. This may be due to the entrance into the market of persons who were out of the labor market in years of prosperity in an attempt to supplement declining family incomes. For this reason and for the reasons set out in the preceding paragraph, it was not considered desirable to extend our estimates beyond 1931. By not taking these new additions into account, the estimated annual earnings per attached worker are probably somewhat too high. However, to the extent that the new additions to the labor market distributed themselves among the various industries in the same way as those already in the market, their effect on wage differentials may be neglected.

(5) Having determined the number of workers attached to each industry, the average number of workers employed in each year was then computed. For years in which there was a Census of Manufactures, the average number employed for the year could be found directly; for inter-censal years it was necessary to interpolate by use of average annual indexes of employment.

In Tables 11, 12 and 13 the resulting estimates of the total number of workers attached to the various industries, the average number employed, and the percentages of unemployment are shown.

TABLE 11

ESTIMATES OF THE TOTAL NUMBER OF WAGE EARNERS ATTACHED TO 20
MANUFACTURING INDUSTRIES: 1923-1929 *

(in thousands)

	1923	1924	1925	1926	1927	1928	1929
Knit Goods	200.0	196.0	194.3	193.4	203.3	210.9	221.5
Iron and Steel	421.4	408.1	408.1	408.1	410.2	410.2	413.9
Silk	128.2	132.7	138.8	137.6	135.1	133.9	132.7
Wool	81.3	77.0	72.6	69.0	66.1	63.9	61.8
Paper and Pulp	124.5	125.7	126.9	127.9	128.0	129.5	129.6
Paper Products	105.3	105.3	106.3	106.3	107.4	109.4	111.5
Book and Job Printing	132.9	132.9	135.5	142.2	142.5	145.1	152.9
News and Magazine Printing	116.7	116.7	117.9	118.7	120.8	125.3	132.5
Paint and Varnishes	23.8	27.0	29.6	32.7	31.5	30.9	30.3
Furniture	170.5	179.9	188.4	199.1	200.3	202.2	208.7
Rubber	156.4	152.5	147.1	147.1	148.4	155.2	157.8
Leather	63.2	60.1	58.8	56.6	55.1	53.3	51.8
Meat Packing	143.7	141.3	138.7	136.1	133.5	131.0	128.5
Lumber	512.7	511.2	506.1	502.0	500.9	496.3	491.7
Electrical Mfg.	268.7	279.0	297.4	305.0	336.0	356.7	382.7
Automobiles	220.7	200.7	233.7	236.5	242.3	248.2	254.6
Agricultural Implements	33.7	33.4	32.8	32.9	37.6	41.4	45.1
Foundries and Machine Shops ..	462.8	451.9	440.1	434.4	448.6	460.9	472.2
Boot and Shoe	239.5	237.3	233.0	230.8	228.8	224.3	223.6
Chemicals	254.7	259.8	264.5	271.1	274.3	281.7	296.6
Total	3860.7	3828.5	3770.6	3887.5	3950.7	4010.3	4100.3

* It is assumed that the numbers attached in 1930 and 1931 were the same as in 1929.

WAGE DIFFERENTIALS

TABLE 12
AVERAGE NUMBER OF WAGE EARNERS EMPLOYED IN 20 MANUFACTURING INDUSTRIES: 1923-1931 *
(in thousands)

	1923*	1924	1925*	1926	1927*	1928	1929*	1930	1931*
Knit Goods	194.2	175.1	186.7	187.7	190.3	190.2	208.5	190.6	178.0
Iron and Steel	388.2	372.9	370.7	394.2	361.3	371.3	394.6	342.9	264.6
Silk	125.2	119.1	132.5	129.3	127.6	127.0	130.5	119.5	109.2
Wood	72.4	69.0	67.1	59.1	61.8	58.9	58.5	47.6	42.9
Paper and Pulp	120.7	117.4	123.8	127.6	123.4	121.6	128.0	123.6	107.9
Paper Products	98.3	97.1	97.7	101.0	101.1	101.5	105.3	97.1	86.7
Book and Job Printing	130.8	132.0	134.6	139.6	142.3	142.9	150.6	147.6	134.3
News and Magazine Printing	115.6	116.2	117.0	118.8	119.4	122.0	129.7	128.4	119.5
Paint and Varnishes	22.8	23.7	25.5	29.7	28.1	28.3	29.4	25.2	22.5
Furniture	168.2	166.1	181.0	190.5	188.1	184.3	193.4	153.8	127.6
Rubber	137.9	123.2	141.9	141.2	142.0	149.2	149.1	115.5	99.3
Leather	59.7	52.2	52.3	52.9	52.9	51.6	49.9	46.3	42.0
Meat Packing	132.8	127.0	120.4	118.0	119.1	120.0	122.5	116.6	106.7
Lumber	495.9	427.5	467.1	440.1	413.9	405.7	419.1	334.0	196.6
Electrical Manufacturing	234.9	234.9	239.1	266.6	241.6	259.3	328.7	272.0	180.1
Automobiles	163.5	185.9	228.4	208.2	181.5	214.9	222.8	159.6	130.6
Agricultural Implements	31.0	24.8	28.7	32.5	33.3	38.9	41.7	31.2	17.5
Foundries and Machine Shops	448.8	383.1	403.8	421.7	397.8	403.1	455.5	384.4	286.7
Boot and Shoe	225.2	205.6	207.0	203.1	203.1	197.0	205.6	191.6	181.4
Chemicals	246.5	234.8	244.8	259.3	253.4	250.0	280.9	266.0	231.5
Total	3613.5	3387.7	3471.2	3631.0	3482.0	3537.7	3814.1	3393.5	2696.4

* Census of Manufactures. Other years derived by interpolating on the basis of the Bureau of Labor Statistics indexes of employment.

TABLE 13
ESTIMATED PERCENTAGES OF UNEMPLOYMENT IN 20 MANUFACTURING INDUSTRIES: 1923-1931

	1923	1924	1925	1926	1927	1928	1929	1930	1931	9 Year Average
Knit Goods	2.9	10.6	3.9	2.9	6.3	9.8	5.8	13.9	19.6	8.4
Iron and Steel	7.8	8.6	9.1	3.4	11.9	9.4	4.6	17.1	36.0	11.9
Silk	2.3	10.2	4.5	6.0	5.5	5.1	1.6	9.9	17.7	6.9
Wool	10.9	10.3	7.5	14.3	6.5	7.8	5.3	22.9	30.5	12.9
Paper and Pulp	3.1	6.6	2.4	.2	3.5	5.2	1.2	4.6	16.7	5.4
Paper Products	6.6	7.8	8.0	4.9	5.8	7.0	5.5	12.9	22.2	8.9
Book and Job Printing	1.5	.6	.6	1.8	.1	1.5	1.5	3.5	12.1	2.5
News and Magazine Printing	.9	.3	.7	.1	1.1	2.6	2.1	3.1	9.8	2.3
Paint and Varnishes	4.2	12.2	12.7	9.1	10.7	8.4	3.6	16.8	25.7	11.5
Furniture	1.3	7.6	3.9	4.3	6.0	8.8	2.5	26.3	38.8	11.1
Rubber	11.8	19.2	3.5	4.0	4.3	3.8	5.5	26.8	37.0	12.8
Leather	5.5	13.1	11.0	6.5	3.9	3.1	3.6	10.6	18.9	8.5
Meat Packing	7.5	10.1	13.1	13.2	10.7	8.3	4.6	9.2	16.9	10.4
Lumber	3.2	16.3	7.7	12.3	17.3	18.2	14.7	11.7	60.0	17.9
Electrical Manufacturing	12.6	15.9	18.9	12.5	28.0	27.2	14.1	28.9	52.9	23.4
Automobiles	25.9	7.3	2.2	11.9	25.0	13.4	12.4	37.3	40.8	19.6
Agricultural Implements	5.3	25.7	12.5	1.2	11.4	6.0	7.5	30.8	61.1	17.9
Foundries	3.0	15.2	8.2	2.9	11.2	12.5	3.5	18.5	39.6	12.7
Boot and Shoe	5.9	13.3	11.1	7.6	12.2	12.1	8.0	14.3	18.6	11.4
Chemicals	3.2	9.6	7.4	4.3	7.6	11.2	5.2	10.3	21.9	8.9
Average *	6.4	11.5	7.9	6.5	11.9	11.7	6.9	17.2	34.2	12.7

* Average percentage of unemployment obtained by subtracting the aggregate employed from the aggregate attached and computing the percentage that unemployed are of total attached.

(B) ESTIMATION OF ANNUAL EARNINGS OF UNSKILLED
WORKERS WITH ALLOWANCE FOR UNEMPLOYMENT

The annual earnings of unskilled labor adjusted to take into account losses in income due to unemployment were computed in the following fashion. The average weekly earnings of unskilled labor in 20 manufacturing industries (Table 5 Chapter II) were first multiplied by 52 to obtain average annual earnings of employed workers. These annual earnings were then adjusted by the average annual rates of unemployment. The loss in earnings due to unemployment subtracted from the average earnings of employed workers yielded the "actual" annual earnings of unskilled labor attached to each industry.

It is important to note the basic assumption made in computing these statistics. In the absence of other data, it has been necessary to assume an identity between the annual rates of unemployment for all wage earners and those of unskilled labor in each industry. While this assumption is more strenuous than might be desired, it provides the only possible basis for estimating differentials in "actual" annual earnings of unskilled labor.

The computed estimates of annual earnings of unskilled labor in 20 manufacturing industries for the period 1923-1931 inclusive are shown in Table 14.

3. PERSISTENCE OF DIFFERENTIALS IN ANNUAL EARNINGS
OF UNSKILLED LABOR ATTACHED TO 20
MANUFACTURING INDUSTRIES

A cursory examination of Table 14 is sufficient to indicate that annual earnings among unskilled labor are not uniform. Are the differentials among the 20 industries stable, or do the relative positions or ranks of the various industries fluctuate markedly from year to year? If the latter be true, then the observed differentials may be attributed to short-run oscillations in business conditions that are of a temporary and changing sort. If, however, a large number of industries appear

TABLE 14
ESTIMATES OF ANNUAL EARNINGS (IN DOLLARS) OF MALE UNSKILLED LABOR IN 20 MANUFACTURING
INDUSTRIES WITH ALLOWANCE FOR UNEMPLOYMENT*: 1923-1931

Industry	1923	1924	1925	1926	1927	1928	1929	1930	1931
Lumber	930	779	874	842	813	823	936	858	354
Boot and Shoe	859	814	887	891	899	890	975	787	709
Knit Goods	878	780	919	928	931	1112	1010	666	572
Electrical	947	923	926	1032	1139	862	1028	817	458
Furniture	976	974	1047	1080	1056	1019	1069	755	548
Wool	1050	1012	1024	921	1024	994	1044	813	702
Agricultural Implements	1104	880	1075	1253	1138	1249	1245	815	358
Paint and Varnishes	1243	1074	1069	1046	1022	1091	1169	948	763
Leather	1045	991	1067	1114	1189	1189	1155	990	768
Meat Packing	1021	1055	1025	1029	1109	1131	1189	1133	959
Foundries and Machine Shops	1195	1038	1156	1236	1130	1131	1276	936	570
Automobiles	926	1127	1293	1218	1078	1284	1309	849	742
Paper Products	1082	1109	1127	1191	1162	1127	1170	979	855
Book and Job Printing	1049	1118	1105	1179	1190	1156	1162	1088	948
Paper and Pulp	1139	1062	1153	1202	1149	1117	1194	1104	859
News and Magazine Printing	1119	1204	1338	1125	1201	1110	1143	1095	954
Rubber	1179	1071	1311	1346	1394	1446	1410	904	720
Silk	1225	1147	1223	1190	1200	1313	1376	1179	1030
Iron and Steel	1259	1260	1284	1364	1257	1329	1426	1029	602
Chemicals	1288	1231	1283	1379	1385	1326	1422	1266	1029

* Average weekly earnings of male unskilled labor times 52 weeks. Adjusted by average annual rates of unemployment of all wage earners.

TABLE 15

DISTRIBUTION OF RANKS OF ANNUAL EARNINGS OF MALE UNSKILLED LADOR

Industry	Final Ranks	Range of Ranks	Number of years in which rank is equal to final rank	Number of years in which ranks differ from final rank by:			Total number of years in which rank is within 3 of final rank
				1	2	3	
Lumber	1	1-8	7	0	0	1	8
Boot and Shoe ...	2	1-9	4	4	0	0	8
Knit Goods	3	2-8	3	3	1	1	8
Electrical Mfg. ...	4	2-11	2	3	3	0	8
Furniture	5	2-8	1	5	1	2	9
Wool	6	3-10	0	3	4	1	8
Agricultural Implements	7	2-17	0	0	1	3	4
Paint & Varnishes .	8	4-18	0	2	2	1	5
Leather	9	7-14	1	3	1	0	5
Meat Packing	10	5-18	1	0	3	1	5
Foundries and Machine Shops .	11	5-16	1	1	2	1	5
Automobiles	12	3-18	0	1	0	1	2
Paper Products ..	13	10-14	2	4	2	1	9
Book and Job Printing	14	9-16	0	4	1	2	7
Paper and Pulp ..	15	9-17	1	2	3	1	7
News & Magazine Printing	16	7-20	1	2	1	1	5
Rubber	17	10-20	0	2	2	2	6
Silk	18	12-20	0	5	2	1	8
Iron and Steel ...	19	7-20	3	3	1	0	7
Chemicals	20	16-20	3	4	1	0	8

to maintain their relative positions with a consistency that may be considered significant, then the existence of persistent differentials of an enduring nature may be inferred.

By employing the same method of ranking industries as that followed in Chapter II, the relative positions of each industry in each year was determined. Table 15 above is a summary of this analysis.

It will be observed that on the basis of final ranks, Lumber, Boot and Shoe, Knit Goods, Electrical Manufacturing and Furniture, are the five industries with the lowest annual earn-

ings in the order listed. On the other end of the scale, it appears that Chemicals paid the highest annual earnings after an allowance is made for losses in income due to unemployment. It is interesting to note that Iron and Steel, an industry subject to violent fluctuations in employment and production, makes a surprisingly good showing by receiving the second highest rank.

The distribution of ranks may be taken as evidence of the amount of variation within each industry and among the various industries. Although it is possible for any single industry to vary in rank from 1 to 20, 11 industries moved within a range of 10 or less. Of even greater significance is the fact that 13 of the 20 industries differed by only 3 or less ranks from their final ranks in two-thirds of the period covered, that is, in 6 out of 9 years. Five industries maintained ranks equal to their final or average ranks in at least one-third of the period. On the basis of this showing, it seems reasonable to conclude that differentials in annual earnings have been persistent and are not alone the result of short-run fluctuations in the business economy.

4. FACTORS ASSOCIATED WITH DIFFERENTIAL ANNUAL EARNINGS

Although one cannot in simple fashion infer relationships that are of causal significance from statistical data, nevertheless a juxtaposition of factors which economic judgment suggests are important may indicate something of the causes at work. To this end, the following discussion attempts to throw some light on the reasons for persistent differences in annual earnings among unskilled labor by measuring the degree of association between these differentials and 6 possible determinants of wage differences: (1) the proportion of women employed in the various industries, (2) differential rates of unemployment, (3) differences in geographical location, (4) differences in average hourly earnings, (5) differences in the length of the work-week and (6) inequalities in the rates of growth in the demand for labor in the different industries.

(A) THE RATIO OF WOMEN TO MEN EMPLOYED

It is frequently argued that industries employing a high percentage of women are likely to be those in which annual earnings are low. To test this hypothesis, the ratio of women to men in each industry in 1929 (based on the average number of wage earners employed in that year as shown in the Census of Manufactures) were ranked and compared with the ranks of industries according to annual earnings. This comparison is shown in Table 16.

If a large number of industries show an inverse relationship between their annual earnings ranks and their ranks based on the proportion of women to men employed, then the hypothesis set out above would find support. The facts, how-

TABLE 16

RATIO OF FEMALE TO MALE WORKERS IN 20 MANUFACTURING INDUSTRIES IN 1929 AND INDUSTRIES RANKED ACCORDING TO ANNUAL EARNINGS OF UNSKILLED LABOR AND RATIOS OF FEMALE TO MALE WORKERS

Industry	Ratio Female to Male Workers	Ranks: Ratio Female to Male	Ranks: Annual Earnings
Iron and Steel	.8	1	19
Lumber	.9	2	1
Agricultural Implements	1.7	3	7
Foundries and Machine Shops .	2.8	4	11
Furniture	6.5	5	5
Paint and Varnishes	6.9	6	8
Automobiles	7.8	7	12
Paper and Pulp	9.6	8	15
Leather	9.9	9	9
News and Magazine Printing ..	10.2	10	16
Meat Packing	11.6	11	10
Chemicals	14.0	12	20
Rubber	23.7	13	17
Book and Job Printing	23.8	14	14
Electrical Manufacturing	39.8	15	4
Wool	48.4	16	6
Boot and Shoe	69.9	17	2
Paper Products	89.3	18	13
Silk	134.0	19	18
Knit Goods	179.0	20	3

ever, appear to be otherwise. Three industries, (Furniture, Leather, and Book and Job Printing), have identical ranks in both series. In three other industries, the difference between the two ranks is only one. These industries are Lumber, Meat Packing and Silk. While Paper Products, Rubber, Chemicals and News and Magazine Printing show a greater difference between their two ranks than the above industries, these 4 industries occupy relatively high ranks in both series.

In sum, in at least one-half of the industries covered, high annual earnings do not appear to be associated with low proportions of female labor employed, nor are low annual earnings related to high proportions of female labor. A rank difference correlation coefficient computed on the basis of the two sets of ranks has a low negative value of .102 which is not significant. It is quite unlikely, therefore, that industrial differences in the labor force of this type are major factors making for persistent differences in annual earnings of unskilled labor. This does not exclude the possibility that in particular industries, the predominance of women exerts a strong downward pull on earnings. The low annual earnings in Electrical Manufacturing, Wool and Knit Goods and the relatively large number of women employed, suggest the existence of such a condition for these industries. Where annual earnings are high, the presence of a large number of women on the labor force may still act to depress wages. Or stated otherwise, if industries with high annual earnings, such as Silk and Paper Products, employed a smaller proportion of women than they do, annual earnings in these industries might be higher than they actually are. For the group as a whole, however, the degree of association between the two factors does not appear to be significant.

(B) DIFFERENTIAL RATES OF UNEMPLOYMENT

Are differences in the levels of annual earnings related to differences in the amount of unemployment in the various industries? Is this relation positive or inverse? Or put differently,

are high annual earnings associated with low rates of unemployment, and contrariwise where annual earnings are low? Or is it characteristic of most industries that annual earnings and unemployment are both relatively high or both relatively low?

A first step in testing which of these associations, if any, are prevalent, is to rank all the industries according to their annual average rates of unemployment. The basic data have already been presented above in Table 13. From the summation of the ranks, the average or final rank for each industry for the period 1923-1931 can be determined. These final ranks are shown below in Table 17 together with the ranks of annual earnings.

The reader will observe that 4 industries with high annual earnings ranks are associated with relatively low rates of un-

TABLE 17
INDUSTRIES RANKED ACCORDING TO AVERAGE ANNUAL RATES OF
UNEMPLOYMENT AND ANNUAL EARNINGS OF UNSKILLED
LABOR: 1923-1931

Industry	Ranks: Rates of Unemployment	Ranks: Annual Earnings
News and Magazine Printing	1	16
Book and Job Printing	2	14
Paper and Pulp	3	15
Silk	4	18
Furniture	5	5
Leather	6	9
Knit Goods	7	3
Chemicals	8	20
Paper Products	9	13
Meat Packing	10	10
Rubber	11	17
Foundries and Machine Shops	12	11
Iron and Steel	13	19
Paint and Varnishes	14	8
Wool	15	6
Boot and Shoe	16	2
Agricultural Implements	17	7
Automobiles	18	12
Lumber	19	1
Electrical Manufacturing	20	4

employment. These are the 2 Printing industries, Paper and Pulp and Silk. Their average rates of unemployment over the 9 year period are 2.3, 2.5, 5.8 and 6.9 percent respectively. On the other extreme, 5 industries with low annual earnings are accompanied by relatively high rates of unemployment. These are Electrical Manufacturing, Lumber, Agricultural Implements, Boot and Shoe, and Wool. For the same period, their respective average rates of unemployment are 23.4, 17.9, 17.9, 11.4, and 12.9 percent. In weighing the importance of these rates of unemployment, it should be noted that they reflect not only the severity of cyclical fluctuations in employment in each industry but also differences in the magnitudes of seasonal variations in the demand for labor.

An examination of the two sets of ranks suggests a marked inverse relationship between the ranks of annual earnings and unemployment ranks. A rank difference correlation coefficient computed from these data, has a negative value of .84. The probability that this association is due to chance is less than 1 out of 200. One may conclude, therefore, that high annual earnings are to a large extent associated with low average annual rates of unemployment and contrariwise, where annual earnings are low. Of course, particular industries vary from this general pattern. It appears, for example, that Furniture, Knit Goods and Leather have relatively low annual earnings and at the same time their annual average rates of unemployment are low compared to other industries. In these cases, it is apparent that other conditions are operative which act to offset the compensating effect of relatively stable employment.

(C) DIFFERENCES IN THE GEOGRAPHICAL LOCATION OF VARIOUS INDUSTRIES

It is a matter of common knowledge that industries differ with respect to predominant types of location. It is interesting to ask whether these differences in location bear some relation to the level of annual earnings in each industry. The problem may, in fact, be viewed from two angles: (a) the

type or size of community in which the industry predominates and (b) the regional distribution of production. Table 18 below shows, for each industry in 1929, the percentage of wage jobs in the South and the percentage of wage jobs which were located in small towns and outlying communities, that is, in places outside of large cities, or satellite cities, or major industrial counties.¹²

It will be observed that the 20 industries show a great similarity with respect to the regional distribution of wage jobs.

TABLE 18
PERCENTAGE OF ALL WAGE JOBS IN THE SOUTH AND IN SMALL TOWNS
AND OUTLYING COMMUNITIES: 1929

Industry	Percent of Jobs in South	Percent of Jobs in Small Towns
Electrical Manufacturing	1.0	6.0
Rubber	3.5	8.8
Automobiles	4.1	9.0
Boot and Shoe	4.6	25.6
Silk	6.2	19.9
Agricultural Implements	6.3	*
Paper Products	6.4	11.8
Paper and Pulp	7.9	49.9
Foundry and Machine Shops	7.9	19.9
Paint and Varnishes	7.9	3.8
Meat Packing	9.1	17.2
Book and Job Printing	10.5	10.5
Wool	10.6	42.6
Iron and Steel	12.2	7.2
Leather	15.3	24.0
News and Magazine Printing	16.1	29.1
Furniture	18.1	30.9
Chemicals	23.6	28.0
Knit Goods	28.2	29.0
Lumber	54.0	88.3

* No data available.

¹² The data are taken from Daniel Creamer's study of the diffusion of industry which is included in *Migration and Economic Opportunity* by Carter Goodrich and Others, University of Pennsylvania Press, Table 78, pp. 708-734. The present writer added one industry, Agricultural Implements, which is omitted from Creamer's survey. In both cases, the data are based on the Biennial Censuses of Manufactures.

Except for the Lumber industry, no other industry has a major part of its activity carried on in the Southern states. For 11 industries, less than 10 percent of all wage jobs in 1929 were in the South while 6 industries had more than 10 percent but less than 20 percent. One would expect, therefore, that in the absence of substantial differences in the regional distribution of wage jobs, differences in annual earnings would be little affected by this factor. When the industries were ranked according to the regional distribution of wage jobs and correlated with their ranks in annual earnings, it appeared that the rank difference correlation coefficient had a value of only $-.09$ which is not significant. Differences between the industries with respect to regional concentration of wage jobs are so small, that they cannot be considered as important factors associated with differences in wages among industries.

On the other hand, the type of community in which an industry predominates, seems to be of greater importance. Table 18 above shows the extent to which the industries in question vary with respect to this factor. In 5 industries (Electrical Manufacturing, Rubber, Automobiles, Paints and Varnishes and Iron and Steel) less than 10 percent of all wage jobs in 1929 were located in these small communities. A second group of 5 industries (Silk, Paper Products, Foundries, Meat Packing and Book and Job Printing) had between 10 and 20 percent of all wage jobs in these places. A third group of 5 industries (Boots and Shoes, Leather, Newspaper Printing, Chemicals and Knit Goods) show percentages between 20 and 30 percent. One industry (Furniture) had more than 30 percent; 2 industries more than 40 percent (Wool and Paper and Pulp), and in the Lumber industry more than 80 percent of all wage jobs were found in these small centers. It is interesting to note that the Lumber and Knit Goods industries which rank high with respect to this factor, are also those in which a large part of their manufacturing is carried on in the South. They are also, as we have pointed out, industries with relatively low annual earnings.

The correlation coefficient computed by comparing the ranks of industries with respect to the level of annual earnings and the percentage of wage jobs found in small communities was found to be $-.26$. This merely summarizes the above observations that there are a small number of industries with high annual earnings in which only a minor part of their output is manufactured outside of large centers; and contrariwise, a few industries with low annual earnings have a relatively large part of their production carried on in small communities.

(D) THE IMPORTANCE OF DIFFERENTIALS IN
HOURLY EARNINGS

Economic analysis has usually accepted the premise in the theory of wages that the level of hourly earnings in any given industry reflects the inducement that must be offered workers to seek employment in that industry. On this reasoning, if employment is highly irregular so that annual earnings are likely to be low, or if the work is of a disagreeable nature, or if other similar risks and uncertainties are more prevalent than in other industries, hourly earnings are likely to be high. On the other hand, if these risks are minimal an industry will be able to obtain a sufficient supply of labor at relatively low hourly rates. Consequently, other things being equal, that is, if costs of movement and individual preferences are everywhere the same, one would expect to find that differences in hourly earnings are positively associated with industrial differences in unemployment. Any deviation from such conformity would be evidence that 'other things' are not equal. It will be worthwhile, therefore, to examine the relationship between differential hourly earnings and annual earnings of unskilled labor and differences in annual average rates of unemployment. The final ranks of both wage series for the period 1923-1931 as well as the unemployment ranks are shown in Table 19.

An examination of the second and third columns of Table 19 indicates that there is a good deal of variation between the ranks of industries based on hourly earnings and their ranks

TABLE 19

INDUSTRIES RANKED ACCORDING TO ANNUAL EARNINGS AND AVERAGE
HOURLY EARNINGS OF MALE UNSKILLED LABOR AND AVERAGE
ANNUAL RATES OF UNEMPLOYMENT: 1923-1931

Industry	Ranks: Annual Earnings	Ranks: Hourly Earnings	Ranks: Rates of Unemployment
Lumber	1	2	19
Boot and Shoe	2	3	16
Knit Goods	3	1	7
Electrical Manufacturing	4	11	20
Furniture	5	4	5
Wool	6	6	15
Agricultural Implements	7	14	17
Paint and Varnishes	8	13	14
Leather	9	10	6
Meat Packing	10	8	10
Foundries & Machine Shops .	11	16	12
Automobiles	12	19	18
Paper Products	13	7	9
Book and Job Printing	14	9	2
Paper and Pulp	15	5	3
News and Magazine Printing	16	17	1
Rubber	17	20	11
Silk	18	15	4
Iron and Steel	19	12	13
Chemicals	20	18	8

according to rates of unemployment. An attempt at the formal correlation of these data failed to yield a significant coefficient. The expectation of a positive association to which we were led by *a priori* considerations is not confirmed by our observations. Evidently 'other factors' make it possible for at least some, though not all, unstable industries to attract workers by the offer of relatively low hourly earnings. And conversely, 'other factors' must be at work which make it possible for workers in at least some, though not all, relatively stable industries to exact relatively high hourly earnings.

Now all of this is consistent with our finding of persistent differentials among industries in respect to annual earnings. If hourly earnings and rates of unemployment just offset each

other, we should have failed to find persistent differentials in annual earnings. In view of this finding, the neat offsetting of hourly earnings and unemployment is not to be expected, and as we have just seen, is not in fact found. The risk of unemployment evidently has not dominated workers' choices of industrial attachments.

On the other hand, the absence of association between hourly earnings and unemployment leads naturally to an expectation of an inverse association between unemployment and annual earnings and of a positive association between hourly earnings and annual earnings. The former association has already been noted.¹³ The expectation of the latter association is likewise confirmed. A correlation between ranks of industries according to hourly earnings and ranks according to annual earnings (see Table 19) yields a coefficient of $+.668$. The probability that so high a value could have been found from chance alone is less than 1 in 200.

The evidence thus clearly points to the importance of other factors, for if no other conditions influenced the level of annual earnings in each industry, the relationship between average hourly earnings and annual rates of unemployment would undoubtedly be both high and significant and persistent differentials would probably not be found. The nature of these other factors is only partially revealed in this chapter. For example, it has already been pointed out that the Lumber industry is concentrated to a large extent in the South and in small communities. In a later section it will be shown that this industry is characterized by a comparatively low rate of growth in its demand for labor. The Knit Goods industry is not only subject to conditions similar to those prevailing in the Lumber industry, but in addition, it is an industry which employs a large number of women. However, all these criteria only partially explain the reason for the differential position of the various industries. Individual preferences and differential costs of

¹³ See Sec. 4 (b) above.

movement which differ from other factors in that they are less amenable to statistical treatment, are nonetheless important since they hamper mobility of workers between industries. A consideration of these factors and the manner in which they affect differentials in earnings is reserved for Part II of this study.

(E) DIFFERENCES IN AVERAGE WEEKLY HOURS OF WORK

If the average number of hours worked per week are the same for all industries, then the observed differences in annual earnings could be attributed to other factors, some of which have already been examined. Since the work-week is not uniform,¹⁴ the possibility exists that differences in hours of work may aggravate differentials in annual earnings if workers in high wage rate industries are employed for a longer number of weekly hours than workers in low wage rate industries. Or the effect may be to reduce or offset but not eliminate differentials in annual earnings if weekly hours are longer in low wage rate industries than in high wage industries. In this case the coefficient of correlation between the ranks of annual earnings and ranks of hours of work would be negative. Another possibility is that differentials in hours may be prevalent but still bear no significant relationship to the differentials in annual earnings. Table 20 provides the data for determining which of these hypotheses can be established.

The data indicate that 5 industries with relatively low annual earnings are characterized by low average weekly hours. The industries are Lumber, Electrical Manufacturing, Wool, Furniture and Boot and Shoe. On the other hand, in 7 high wage industries, workers are employed for relatively long hours. This group is composed of Iron and Steel, Foundries, Paper and Pulp, Chemicals, Silk, Automobiles and Paper Products. A few industries, however, show an inverse relationship between the ranks in both series. Note the relatively high earnings and short hours in the two Printing industries,

¹⁴ See above Chapter II, pp. 47-48.

TABLE 20

INDUSTRIES RANKED ACCORDING TO ANNUAL EARNINGS AND AVERAGE WEEKLY
HOURS OF UNSKILLED LABOR: 1923-1931

Industry	Ranks: Annual Earnings	Ranks: Average Weekly Hours
Lumber	1	8
Boot and Shoe	2	2
Knit Goods	3	11
Electrical Manufacturing	4	6
Furniture	5	7
Wool	6	5
Agricultural Implements	7	14
Paint and Varnishes	8	13
Leather	9	3
Meat Packing	10	15
Foundries and Machine Shops .	11	12
Automobiles	12	10
Paper Products	13	16
Book and Job Printing	14	4
Paper and Pulp	15	17
News and Magazine Printing ..	16	1
Rubber	17	9
Silk	18	18
Iron and Steel	19	20
Chemicals	20	19

and Rubber and the low earnings and long hours in Knit Goods and Agricultural Implements.

The rank difference correlation coefficient computed from these data has a positive value of .50 and is significant. Apparently, differences in weekly hours of work may be added to the list of factors that are likely to cause annual earnings among unskilled laborers to vary from industry to industry.

(F) DIFFERENTIAL RATES OF GROWTH IN THE DEMAND
FOR LABOR

If an industry continues to expand over a long period of time, there is a presumption that its growth will react favorably on annual earnings of workers employed in that industry. On the other hand, a chronically depressed industry is likely to be one in which earnings are low. This assumes, however, that the

conditions of labor supply are such that they do not alter quickly and commensurately with changing demands for labor. Even in a depressed industry, a shrinkage in demand for labor which is counteracted by a more than proportionate diminution in the number of workers seeking employment in that industry, will cause, other things being equal, earnings in that industry to rise. The question whether industrial differences in rates of growth act to raise or depress the level of earnings in different industries is therefore definitely related to the factors that determine the conditions of labor supply, and in particular, the conditions that affect the extent of labor mobility among industries.

Difficulties of a theoretical and statistical nature arise when one attempts to measure empirically the degree of association between differentials in annual earnings of unskilled labor and differences in the rate of growth in the demand for labor of this type. Let us suppose that one finds, after making the appropriate correlation, that there is no statistically significant association between the two factors. Theoretically, the absence of a causal relationship would not be proved, for if, say, an industry shows a relatively high rate of growth but also relatively low annual earnings, it is possible that its annual earnings would still be lower if the industry were declining rather than growing. The measure of significance, from a statistical viewpoint, is consequently insufficient to rule out the possibility of an underlying causal relationship between these factors. On the other hand, barring intercorrelation with other related factors, if a marked positive correlation is observed and is shown to be significant, there is a presumption of a causal connection.

If employment data for unskilled workers were available, it would be possible to compute the average annual rates of growth of employment in each industry which could then be used to represent roughly the average rate of growth in the demand for unskilled labor. Unfortunately, except for indices of employment which cannot be used for this purpose, no annual or biennial record exists of the number of unskilled

workers employed in each industry. As an alternative, the average annual rates of growth in employment of *all* workers have been computed from the data provided in the Biennial Censuses of Manufactures from 1921 to 1929. These rates of growth were then ranked and correlated with the ranks of annual earnings of *all* workers attached to the 20 manufacturing industries. Since our problem is simply to determine the degree of association between differentials in annual earnings and differential rates of growth in the demand for labor, this substitution may be accepted as adequate. The comparison between these two sets of ranks is shown in Table 21.

The reader will observe that the difference between the highest and lowest average rate of growth in employment is

TABLE 21
AVERAGE RATES OF GROWTH IN EMPLOYMENT (1921-1929), INDUSTRIES
RANKED ACCORDING TO THIS FACTOR AND ACCORDING TO ANNUAL
EARNINGS OF ALL ATTACHED WAGE EARNERS (1923-1931)

Industry	Average Rate of Growth	Ranks: Rate of Growth	Ranks: Annual Earnings
Meat Packing	-2.0	1	12
Wool	-2.0	2	6
Leather	-2.0	3	10
Lumber	.5	4	1
Boot and Shoe	.6	5	4
Silk	.8	6	5
Paper and Pulp	2.0	7	16
News and Magazine Printing	2.2	8	20
Paper Products	2.9	9	7
Foundries and Machine Shops	2.9	10	17
Book and Job Printing	2.9	11	19
Knit Goods	2.9	12	2
Agricultural Implements	3.6	13	11
Rubber	3.7	14	13
Chemicals	3.8	15	9
Iron and Steel	4.9	16	18
Furniture	5.0	17	8
Paint and Varnishes	6.0	18	15
Electrical Manufacturing	9.9	19	3
Automobiles	13.0	20	14

considerable, but that for the bulk of the industries, the range is quite small. Meat Packing, Wool and Leather experienced a shrinkage in employment at equal annual rates. An average rate of increase of less than one percent is found in Boot and Shoe, Lumber and Silk. Five industries show a positive gain between 2 and 3 percent per annum while in 5 other industries, the average gain ranged between 3 and 5 percent. Only 3 industries indicate a rate of growth of more than 5 percent a year. But 6 had a rate of growth less than 2 percent a year.

In view of the generally similar rate of growth experienced by so many of the industries surveyed, it would be surprising indeed if a high correlation between rates of growth and annual earnings were found. Nevertheless, a significant positive coefficient of .338 is found. It is worth bearing in mind, therefore, that differences in rates of growth may be a factor of some importance in accounting for differences in annual earnings.

5. SUMMARY

The main points of this chapter can now be brought together. Estimates of annual earnings of unskilled workers attached to 20 manufacturing industries were first examined in order to determine whether the differentials among the industries were persistent. Although the position of each industry fluctuates from year to year, more than two-thirds of the industries remained within close range of their average positions over the 9 year period. It was therefore concluded that differentials in annual earnings of unskilled labor are of an enduring sort and are not only the result of short-run or temporary changes in business conditions.

It has been emphasized throughout the preceding discussion that although empirical correlations do not establish causality between two or more sets of factors, they may be used to suggest some of the causes at work. To this end, annual earnings were correlated with several possible wage determinants and the following coefficients of correlation were obtained:

Between:

Annual Earnings of Unskilled Labor and the Proportion of Women Employed	-102 *
Annual Earnings of Unskilled Labor and Rates of Unemployment	-.84
Annual Earnings of Unskilled Labor and Proportion of Industry in Small Towns	-.26
Annual Earnings of Unskilled Labor and Proportion of Industry in the South	-.09 *
Annual Earnings of Unskilled Labor and Average Hourly Earnings of Unskilled Labor	.668
Annual Earnings of Unskilled Labor and Average Weekly Hours	.50
Annual Earnings of All Workers and Average Annual Rates of Growth in the Demand for Labor	.338

* Not significant.

The associations that we carry away from this survey of differences in annual earnings and related factors may therefore be summarized as follows:

1. Industries with relatively high annual earnings are in most cases those in which average hourly earnings are high.
2. To a somewhat less extent they are long hour industries.
3. As indicated by the negative correlation with rates of unemployment, a large number of industries with high annual earnings have comparatively steady employment, while many low earnings industries are subject to considerable fluctuations in employment. Among the high wage industries a small number may be found which are not high wage rate industries nor long hour industries, but in which employment is comparatively stable.
4. To a small extent, industries showing high annual earnings are those in which manufacturing is conducted in large centers of population.
5. In part, industries with high annual earnings indicate relatively high rates of growth.
6. For most industries, differences in the proportion of women employed do not show a marked association with differentials in annual earnings.

In Part II of this study an attempt is made to deal with some of the causal factors in a systematic fashion and to provide a theoretical framework for analyzing the problem of wage differentials.

CHAPTER IV

DISPERSION OF WAGES

THE preceding chapters have demonstrated that over a long period of time the ordinal positions of industries with respect to various types of wage payments are sufficiently stable to warrant the conclusion that differentials in wages are persistent. It was also pointed out that the size or magnitude of these persistent differentials cannot be measured empirically; it is the rank or order of industries that can alone be safely established from available statistical sources.¹

When one turns from the question of long-time stable wage differentials to differences that appear at any given time irrespective of their nature, a measure of the degree of wage uniformity can be obtained. This measure, the degree of wage dispersion, is the result of two types of forces: the peculiar conditions of labor supply among various industries that are basically the cause of persistent wage differentials and the shorter-run differences in industrial demand for labor. It is the purpose of the present chapter to examine the amount of wage dispersion in certain years and changes in dispersion from year to year.

A convenient method of describing the amount of wage dispersion in a wage series is provided by computing the coefficient of variation for each year. This statistical measure indicates the percentage of the annual mean wage within which wages in approximately 66 percent of the industries fall. The coefficient of variation is then a measure of the scatter or dispersion of wages about the mean wage of all industries in any given year. Coefficients of variation have been computed for each year in which wage data are available for the four wage series already examined in Chapters II and III: average hourly entrance rates, average hourly earnings, average weekly earnings and the estimated annual earnings of unskilled labor.

¹ Cf. Chapter II, fn. 4, p. 31.

I. DISPERSION OF AVERAGE HOURLY ENTRANCE RATES

Table 22 below shows the average hourly entrance rates of unskilled labor in 13 industries together with the coefficients of variation for each year. The data on which these computations are based have already been presented in Chapter II.²

TABLE 22

AVERAGE HOURLY ENTRANCE RATES (IN CENTS) OF MALE UNSKILLED LABOR
IN 13 INDUSTRIES AND COEFFICIENTS OF VARIATION, 1926-1937

Year	Average Hourly Rate	Coefficient of Variation (%)
1926	.426	8.8
1927	.424	9.1
1928	.448	13.3
1929	.432	10.6
1930	.429	10.6
1931	.403	16.6
1932	.355	24.8
1933	.333	19.0
1934	.420	13.0
1935	.430	14.2
1936	.434	9.0
1937	.514	10.8

It will be observed that in only 3 years (1926, 1927 and 1936) was the coefficient of variation less than 10 percent. This means that approximately two-thirds of all the industries covered by the survey came within 10 percent of the average hourly entrance rate in each of these 3 years. In 9 years, the coefficient of variation was greater than 10 percent, reaching a high point in 1932 when it exceeded 24 percent.

The rise in average hourly entrance rates during the 'twenties was accompanied by a relatively greater rise in the degree of wage dispersion. While average entrance rates rose about 5 percent between 1926 and 1928, the coefficient of variation increased more than 53 percent. This suggests that the various industries shared unequally in the advance, for if the participa-

² See Table I, p. 33.

tion had been uniform, the degree of wage dispersion would have remained unchanged. In the depression which followed, this situation is even more apparent. Between 1929 and 1932, average hourly entrance rates declined approximately 18 percent while the coefficient of variation more than doubled. Between 1932 and 1937 the increase in average entrance rates was 44 percent; the degree of dispersion during these years was more than halved. In each of these three periods it appears that there was considerable variability in the extent to which different industries suffered or benefited by a rise or decline in average hourly entrance rates.

The fact that the amount of wage dispersion varies from one year to another, is another symptom of the fact that wage differentials are affected by cyclical fluctuations in industry. However, the data under review offer no clear indication that there is either positive or negative conformity with general business cycles, that is, that wage differentials widen during periods of business depression and narrow in prosperous years, or *vice versa*. Note, for example, the behaviour of the coefficients of variation after 1926. It is true that from the peak in general business in 1926 to the trough in 1927, the coefficient of variation increased. This is similar to the movements in the coefficients of variation between 1929 and 1932. On the other hand, the degree of wage dispersion increased between 1927 and 1928 whereas between 1932 and 1937 the movement is in the direction of greater wage rate uniformity. Both these intervals of time were, in the main, years of business expansion.³

2. DISPERSION OF AVERAGE HOURLY EARNINGS

Differences in average hourly earnings among unskilled labor may be examined in the same manner. Table 23 below presents the data on average hourly earnings for all 21 manu-

³ The annual business cycle turning dates are those suggested by Professor W. C. Mitchell. In other sections of this study where business cycles turning dates are quoted, the same source has been used.

TABLE 23
 AVERAGE HOURLY EARNINGS (IN CENTS) OF MALE UNSKILLED LABOR
 IN 21 MANUFACTURING INDUSTRIES AND THE COEFFICIENTS
 OF VARIATION: 1920-1937

Year	Average Hourly Earnings	Coefficient of Variation (%)
1920	.529	9.2
1921	.437	10.3
1922	.402	11.4
1923	.443	10.8
1924	.458	10.2
1925	.455	10.8
1926	.461	9.5
1927	.471	10.5
1928	.474	10.2
1929	.486	11.2
1930	.478	12.9
1931	.460	13.4
1932	.400	13.9
1933	.401	11.8
1934	.478	10.2
1935	.494	12.4
1936	.498	12.1
1937	.568	14.3

facturing industries for the period 1920-1937 together with the coefficients of variation for each year.⁴

The figures indicate that average hourly earnings in 1920 were higher than in 1929 and that in 1937 they exceeded the levels reached in both preceding peaks. Furthermore, it appears that in all the years preceding and including 1929, the coefficients of variation were smaller than in the years after 1929, with the exception of 1934. In this sense one may say that average hourly earnings were more uniform between 1920 and 1929 than they have been since then. The small amount of wage dispersion in 1934 is probably due in part to the minimum wage legislation introduced under the National Industrial Recovery Administration. The widening of wage differentials

⁴ For industrial data see Table 3, Chapter II, p. 36.

after 1934 may be the result of two conditions: the general recovery of business and the abolition of the NRA codes in June 1935.

The extent to which the various industries shared in the changes in average hourly earnings, is indicated by the following comparison:

	Percent Change in Average Hourly Earnings	Percent Change in Coefficient of Variation
1920-1921	-17.3	+10.8
1921-1929	+11.2	+ .9
1929-1932	-17.6	+25.2
1932-1936	+22.0	-12.9

If hourly earnings in all industries change in the same proportion (i.e., if they increase or decrease in the same degree), the coefficient of variation will remain constant. If, however, the high wage industries increase proportionately more than the low wage industries, or if the low wage industries decline more than the high wage industries, the coefficient of variation will increase. On the other hand, hourly earnings will become more uniform if the high wage industries decline more than the low wage industries or if the low wage industries increase relatively more than the high wage industries.

During the periods 1920-1921 and 1929-1932 when average hourly earnings declined, differentials in these payments increased substantially. In fact, the increase in wage dispersion between 1929 and 1932 was more than double the increase between 1920 and 1921. In both periods it appears that the 21 industries shared unequally in the decline, the industries with low average hourly earnings having fallen relatively more than the high wage industries. On the other hand, the rise in average hourly earnings between 1921 and 1929 seems to have been shared almost uniformly for the coefficient of variation increased less than 1 percent. Note, furthermore, that the rise in average hourly earnings between 1932 and 1936 was ac-

accompanied by a marked drop in wage dispersion. It may be inferred that during these years industries with low hourly earnings rose to a greater extent than the high wage industries.

In the preceding section, the question whether there was any correspondence between changes in wage rate differentials and movements in general business conditions was raised, but because of the limits set by the data, no definite answer could be given. The same question may now be asked with respect to average hourly earnings. In the 18 year period covered by the data, four cycles in general business can be identified. For purposes of analysis it will be useful to divide each cycle into two parts, 'peak to trough' and 'trough to peak.' When this is done, the following changes in differentials in average hourly earnings in each period are observed:

Peak to Trough	Change in Coefficient of Variation	Trough to Peak	Change in Coefficient of Variation
1920-1921	increase	1921-1923	increase
1923-1924	decrease	1924-1926	decrease
1926-1927	increase	1927-1929	increase
1929-1932	increase	1932-1936	decrease

There appears to be greater conformity of changes in average hourly earnings differentials with general business cycle movements in the 'peak to trough' periods than in 'trough to peak' periods. In the first case (peak to trough), the coefficient of variation increased three out of four times, while in the second (trough to peak), there seems to be an even division, two increases, and two decreases. While there seems some ground for believing that changes in general business are associated with the amount of dispersion in average hourly earnings, the direction of this effect cannot be stated too confidently. Certainly the contention that differentials narrow during years of prosperity and widen during periods of depression cannot be supported on the basis of the data examined above.

3. DISPERSION OF AVERAGE WEEKLY EARNINGS

The level of average weekly earnings of male unskilled labor together with the coefficients of variation for each year from 1920 to 1937 are shown in table 24.⁵

TABLE 24
AVERAGE WEEKLY EARNINGS (IN DOLLARS) OF MALE UNSKILLED LABOR
IN 21 MANUFACTURING INDUSTRIES, AND THE COEFFICIENTS
OF VARIATION: 1920-1937

Year	Average Weekly Earnings	Coefficients of Variation (%)
1920	26.06	13.0
1921	20.28	8.3
1922	20.30	9.8
1923	22.28	11.3
1924	22.41	11.6
1925	22.93	10.9
1926	23.21	11.8
1927	23.54	11.9
1928	23.89	12.2
1929	24.40	12.1
1930	21.90	13.2
1931	19.18	13.7
1932	14.48	16.3
1933	14.91	12.6
1934	16.42	11.5
1935	18.28	11.9
1936	19.98	11.2
1937	22.48	12.2

No regular conformity can be discerned between the movements of average weekly earnings and changes in the amount of wage dispersion. Average weekly earnings declined sharply between 1920 and 1921 followed by an uninterrupted rise until 1929. This is accompanied by a narrowing of wage differentials between 1920 and 1921, a marked increase between 1921 and 1924, followed by a period until 1929 when the amount of dispersion remained almost unchanged. It will be observed,

⁵ See Table 5 for basic data, p. 41 above.

however, that the peak in the dispersion of average weekly earnings was reached in 1932, whereas the highest point in average weekly earnings came in 1929. For three years (1930, 1931 and 1932) during which average weekly earnings fell precipitously, differentials in these wages continued to widen and at an accelerated pace. The lowest point in average weekly earnings in 1932 corresponds to the highest point in wage dispersion. From 1932 to 1937 the rise in weekly earnings was accompanied by a substantial narrowing of wage differentials. Thus one sees a fair degree of positive association between average weekly earnings and the coefficient of variation during the 'twenties. During the 'thirties, however, the association appears to have been inverse.

The extent to which the various manufacturing industries participated in the changes in average weekly earnings is suggested by the following comparison of the percentage changes in average weekly earnings and the percentage changes in coefficients of variation in four periods:

	Percent Change Average Weekly Earnings	Percent Change Coefficient of Variation
1920-1921	-22.1	-36.1
1921-1929	+20.3	+45.7
1929-1932	-40.7	+34.7
1932-1936	+36.6	-31.2

Observe first, the contrast in the behavior of wage differentials during the two periods of business recession, 1920-1921 and 1929-1932. In both periods average weekly earnings declined; the drop in 1929-1932 was almost double the decline in 1920-1921. But wage differentials narrowed between 1920-1921, whereas they widened between 1929 and 1932. Thus, not only did the various industries share unequally in the fall in average weekly earnings in both periods, but it appears that between 1920 and 1921 average weekly earnings declined most in the high wage industries, while between 1929 and 1932,

the low wage industries bore a relatively larger share of the decline.

Secondly, the data indicate that average weekly earnings increased substantially between 1921 and 1929 and between 1932 and 1936. Here again, the experience of the various industries was not identical, for differentials in average weekly earnings widened between 1921 and 1929 and narrowed between 1932 and 1936. This suggests that in the earlier period the rise in average weekly earnings in the high wage industries was greater than the advance in the low wage industries. Similarly, it may be inferred that between 1932 and 1936, earnings in the low wage industries increased more than those in the high wage industries.

Let us now see whether there is any conformity between cyclical changes in general business and changes in the degree of dispersion in average weekly earnings. The 'peak to trough' and 'trough to peak' periods of four cycles in general business are presented below with the corresponding changes in the coefficients of variation in average weekly earnings.

Peak to Trough	Change in Coefficient of Variation	Trough to Peak	Change in Coefficient of Variation
1920-1921	decrease	1921-1923	increase
1923-1924	increase	1924-1926	increase
1926-1927	decrease	1927-1929	increase
1929-1932	increase	1932-1936	decrease

The reader will note that wage differentials narrowed in two 'peak to trough' periods. However, in an equal number of recession periods, differentials in average weekly earnings widened. In three 'trough to peak' periods there appears to have been an increase in wage dispersion, and in only one expansion period is there evidence of a narrowing of wage differentials. It is clear that nothing conclusive can be deduced from this information. While the negative position that business cycles are not related to changes in wage dispersions can-

not be upheld, it is equally difficult to state on the basis of these data, just what is the association between the two factors.

4. DISPERSION OF ANNUAL EARNINGS

Table 25 shows the annual earnings of unskilled labor for the period 1923-1931 and the coefficients of variation for each year. The reader will note that the figures on annual earnings are unweighted arithmetic averages of annual earnings in 20 manufacturing industries.⁶ Or more, correctly, by using the crude arithmetic average, it is assumed that an equal number of workers are attached to all industries. Although the inaccuracy of this assumption is recognized, no alternative method of obtaining an average for all industries was available since the actual number of unskilled workers attached to each industry is not known.⁷ For the purposes of the point at issue—changes in annual earnings from year to year—it is believed that the use of the arithmetic average is adequate. Since the annual coefficients of variation are always measured from the arithmetic average, the lack of an appropriately weighted mean creates no difficulty on this score.

TABLE 25
ARITHMETIC AVERAGE OF ANNUAL EARNINGS (IN DOLLARS) OF UNSKILLED
LABOR IN 20 MANUFACTURING INDUSTRIES AND COEFFICIENTS
OF VARIATION: 1923-1931

Year	Average Annual Earnings	Coefficients of Variation (%)
1923	1076	11.8
1924	1032	13.3
1925	1109	12.7
1926	1128	13.4
1927	1123	11.4
1928	1135	13.9
1929	1185	12.3
1930	950	16.2
1931	725	27.8

⁶ See Table 14, Chapter III, p. 67 for detailed figures.

⁷ Cf. discussion, Chapter III, pp. 53-66.

From these figures several interesting observations may be made. Although annual earnings were highest in 1929, this point was only 10 percent above annual earnings in 1923 and 5 percent higher than in 1926. By 1931 annual earnings had fallen almost 40 percent from the 1929 level. Or stated more dramatically, the 7 year gain in annual earnings (1923-1929) was dissipated in one year and by 1931 annual earnings were more than 30 percent lower than in 1923.

Until 1929 changes in the annual amount of wage dispersion do not appear to be very marked. The lowest coefficient of variation was 11.4 and the highest 13.9 percent. During the period 1923-1929 when annual earnings advanced 10 percent, the coefficient of variation increased by somewhat less than 5 percent. During this period then, one may infer that annual earnings in the high wage industries advanced relatively more than earnings in the low wage industries, but that the differences in expansion were not very great. The experience of the different industries after 1929, on the other hand, seems to diverge to a greater extent. The 40 percent drop in annual earnings between 1929 and 1931 was accompanied by a considerable widening of wage differentials. Note that the coefficient of variation more than doubled during these years. The evidence suggests that the depression cut in earnings must have been more drastic in low wage industries than in high wage industries.

Since the period covered by the annual earnings data is comparatively short, one can hardly expect to determine whether there is any relationship between general business cycles and changes in the degree of wage disparity. All that can be said is that in two 'trough to peak' periods, 1924-1926 and 1927-1929, differentials in annual earnings of unskilled labor widened. Note, however, that an increase in wage dispersion also occurred in two 'peak to trough' periods, 1923-1924 and 1929-1931. In only one depression period, 1926-1927, is there evidence of a narrowing of wage differentials. Whether the absence of any marked relationship is due to the limitations

of the data or to the fact that there is no real association between business cycles and wage differentials, remains, so far as this study is concerned, an enigma.

5. COMPARISON OF COEFFICIENTS OF VARIATION

The coefficients of variation for average hourly entrance rates, average hourly earnings, average weekly earnings and average annual earnings are now brought together in Table 26 and presented graphically in Chart I.

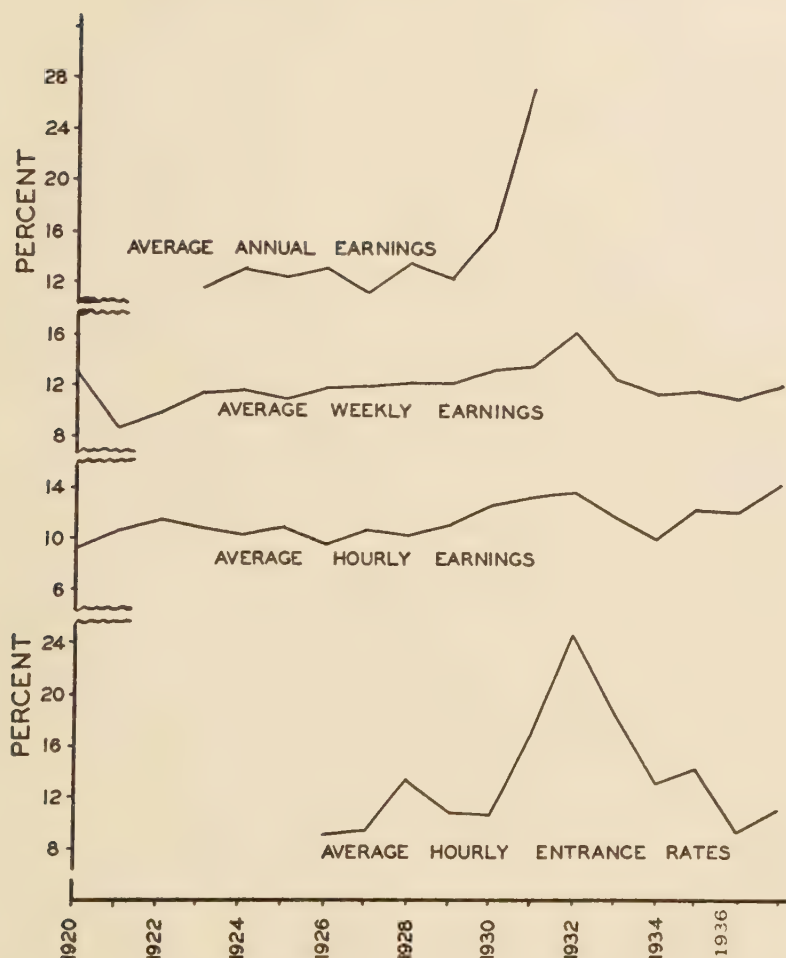
An examination of these figures reveals that in the main there are no great differences in the dispersion around the

TABLE 26

COEFFICIENTS OF VARIATION: AVERAGE HOURLY ENTRANCE RATES, AVERAGE HOURLY EARNINGS, AVERAGE WEEKLY EARNINGS, AND AVERAGE ANNUAL EARNINGS OF MALE UNSKILLED LABOR

Year	Coefficients of Variation (%):			
	Hourly Rates	Hourly Earnings	Weekly Earnings	Annual Earnings
1920		9.2	13.0	
1921		10.3	8.3	
1922		11.4	9.8	
1923		10.8	11.3	11.8
1924		10.2	11.6	13.3
1925		10.8	10.9	12.7
1926	8.8	9.5	11.8	13.4
1927	9.1	10.5	11.9	11.4
1928	13.3	10.2	12.2	13.9
1929	10.6	11.2	12.1	12.3
1930	10.6	12.9	13.2	16.2
1931	16.6	13.4	13.7	27.8
1932	24.8	13.9	16.3	
1933	19.0	11.8	12.6	
1934	13.0	10.2	11.5	
1935	14.2	12.4	11.9	
1936	9.0	12.1	11.2	
1937	10.8	14.3	12.2	
Av. 1923-31		11.1	12.1	14.7
Av. 1920-37		11.4	11.9	
Av. 1926-37	13.8	11.8	12.5	

CHART I
COEFFICIENTS OF VARIATION



mean wage in each series in most years. For the 18-year period, the average coefficients of variation of hourly and weekly earnings differed by less than one percent. Although the average dispersion of annual earnings is somewhat larger than that of

rates, hourly and weekly earnings, here too the differences are small. It is in years of depression that differences between the series become more marked.

The data presented graphically in Chart I show the year to year changes in wage dispersion somewhat more clearly. It will be noted that there is a strong similarity between the movements in the four series, although the differences should not be overlooked. For wage rates, hourly and weekly earnings, differentials reached their peak (i.e. were widest) in 1932. A sharp drop in wage dispersion, or an increase in wage uniformity, took place between 1932 and 1934. For entrance wage rates, this reduction in differentials continued until 1936, except for 1935. Differentials in hourly earnings, however, appear to increase from their low point in 1934 to 1937. Between 1923 and 1929 the coefficients of variation in hourly and weekly earnings remained almost constant. Similarly, in the case of differentials in annual earnings, the degree of wage dispersion shows no great change until 1930.

CHAPTER V

GEOGRAPHICAL WAGE DIFFERENTIALS

I. INTRODUCTION

THIS chapter is offered as an experiment in the identification and description of geographical wage differentials among unskilled labor. By geographical wage differentials we mean those differences in wages that arise among the various geographical divisions and subdivisions of a country. The same questions which were investigated in the case of industrial differentials may usefully be addressed to geographical differentials. Are they persistent or merely temporary? And if they are persistent, how great a range of difference exists among regions, and how does that range fluctuate?

In order to test whether geographical wage differentials are persistent, it was necessary to obtain wage series for different geographical regions which were continuous for a sufficiently long period. After a careful examination of the published material bearing on this question, the author found that the only usable series were those on average hourly entrance rates compiled by the Bureau of Labor Statistics for July 1st of each year since 1926.¹ A word of caution may thus be in order for those who are tempted to extend some of the conclusions of this chapter to other types of wage differentials. Nothing is said here concerning geographical differences in earnings, whether hourly, weekly or annual. Nor has any attempt been

¹ The United States Bureau of Labor Statistics has from time to time made wage studies presenting data on a geographical basis for individual industries. These studies are included in the Wage and Hour Series of the Bureau. After careful examination of this material, the present writer decided not to include it in this study because (a) the data are highly discontinuous (in some cases an industry was studied only once, a few industries were surveyed 2 or more times but at wide intervals of time, often 2 or 4 years), and (b) in several cases it was difficult to segregate the wages of unskilled labor from other types of labor. Although the second difficulty might have been overcome, the fact that no continuous wage series could be formed, from this material, was the more important consideration.

made to handle the question of geographical differences in real wages. The problem at hand is merely that of describing the pattern of short-run as well as persistent geographical differentials in average hourly entrance rates among unskilled labor.

Two major geographical regions are employed in the following analysis: North and South. These, in turn, are composed of several subdivisions or districts: in the North they are, New England, Middle Atlantic States, East North Central States, West North Central States, Mountain and Pacific States, and in the South, the South Atlantic States, East South Central States, and West South Central States.² Is this classification an appropriate one for an analysis of geographical wage differentials? In this connection, two remarks are appropriate. First, the agency collecting the original data has made use of this classification and therefore the student, having decided that the statistics are satisfactory in all other respects,³ has no alternative but to use them if he desires to investigate the geographical aspects of the wage problem. Secondly, these divisions do not appear to be entirely arbitrary. From our knowledge of the geographical distribution of industry, and from what is generally understood to be the economic divisions of the United States, these categories may be accepted as useful groupings for the purpose of the present study.

The character of the samples themselves, moreover, is such as to allow one to use the data with a fair degree of confidence. Although on the average the sample covers only between

² The states included in these divisions are: *New England*: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont. *Middle Atlantic*: New Jersey, New York, Pennsylvania. *East North Central*: Illinois, Indiana, Michigan, Ohio, Wisconsin. *West North Central*: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota. *Mountain*: Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, Utah, Wyoming. *Pacific*: California, Oregon, Washington. *South Atlantic*: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia. *East South Central*: Alabama, Kentucky, Mississippi, Tennessee. *West South Central*: Arkansas, Louisiana, Oklahoma, Texas.

³ For additional criticism of the data, see Chapter II, pp. 27-31.

5 and 10 percent of the population of unskilled workers, it undoubtedly accounts for a larger proportion of those who enter their jobs each year. In addition, in absolute size it is quite impressive. The average sample during the twelve years surveyed, covered some 136 thousand workers employed in 5238 establishments. Finally, the geographical distribution of these workers was such that the sample in each district appears to cover a large number of workers who constitute about the same proportion of all workers in the district as the total sample does of the whole country. The table which follows uses Creamer's analysis of all wage jobs in the United States and illustrates this clearly.⁴

District	Number of Workers Covered by Sample: Average 1926-1935	Percent of Workers in Sample: Average 1926-1935	Percent of All Wage Jobs: 1919-1933 (Creamer)
New England	8116	5.9	13.4
Middle Atlantic	28775	21.0	29.6
East North Central	40285	29.4	26.8
West North Central	15133	11.0	5.9
Mountain	4348	3.1	1.1
Pacific	12678	9.2	5.0
<i>Total North</i>	109335	79.6	81.1
South Atlantic	11952	8.8	11.0
East South Central	6027	4.4	3.9
West South Central	9446	7.2	3.3
<i>Total South</i>	27425	20.4	18.2
<i>Total United States</i>	136760	100.0	100.0

The reader will note that while the proportionate representation of the different districts in the two sets of data is not identical, these differences do not appear to be very great. The Bureau of Labor Statistics' sample gives more weight to the

⁴ Goodrich, C. and others, *op. cit.*, p. 316, "The statistical unit is the number of wage jobs defined as the number of wage earners (average for the year) reported to the Census of Manufactures." *ibid.*, p. 315, fn. 12.

three Southern districts but this may add to the adequacy of the sample for our purposes for there is reason to believe that Southern industries employ a relatively larger proportion of unskilled labor than Northern industries.⁵

The discussion in this chapter follows the procedure adopted in the earlier portions of this study. In Section 2 the data are tested in order to determine whether geographical differences in wage rates are persistent. The problem is here treated in three parts: (a) persistence of differentials within the North, (b) persistence of differentials within the South, and (c) stability of differentials between the North and South. The pattern of wage dispersion in any given year and changes in such dispersion from one year to another are described in Section 3. As in the preceding section, the discussion in Section 3 is developed in terms of dispersion of wage rates in the North, in the South, and comparative degrees of dispersion between the North and the South.

2. PERSISTENCE OF GEOGRAPHICAL DIFFERENTIALS IN WAGE RATES

(A) PERSISTENCE OF DIFFERENTIALS WITHIN THE NORTH

The technique used in testing wage data for persistence of differentials has already been explained.⁶ When applied to the geographical wage material the following procedure was observed: (1) the wage rates for identical industries in each district and the two major regions were ranked for every year from 1926 to 1937; (2) from the summation of all the ranks for each industry the final or average ranks of the various industries were obtained; (3) a comparison between these final ranks and the annual ranks indicated whether intra-district and intra-regional differentials were stable and hence persistent, or whether the ordinal positions of the various

⁵ Cf. Heer, Clarence, *Income and Wages in the South*, Chapel Hill, North Carolina, p. 43.

⁶ See above, Chapter II, pp. 31-32.

industries in each locality showed considerable variation. In the latter case, the inference that differentials were persistent, would not be valid.

Because of the large number of tables that would be necessary to show the wage rates in all industries in each of the 9 Northern and Southern districts, together with the various tables showing the ranked data, (a total of 27 tables), this material is omitted from the present study. The findings based upon these data can, however, be stated summarily. It was observed that in the case of each district, irrespective of the region to which it belonged, differences between industries were stable and persistent over the 12 year period. The characteristics of the entire regions are discussed in the following paragraphs in greater detail.

Table 27 shows the distribution of ranks of average hourly entrance rates in 13 Northern industries for the period 1926-1937. The actual wage data from which the ordinal positions of each industry were obtained, are to be found below in Table 31.

The consistency with which practically all of the 13 industries retained certain relative positions is apparent at first glance. With only one exception, the Leather industry, all the other industries maintained positions equal to or different from their average ranks by no more than 3 ranks in at least two-thirds of the period covered. Five industries indicate even less variation. Note that Brick, Tile and Terra Cotta, Paper and Pulp, Automobiles, General Contracting and Petroleum Refining, do not vary by more than 3 ranks from their average ranks in all of the 12 years. The claim of the Lumber industry to the position of the lowest wage-rate industry in the North can hardly be contested for in 9 years wage rates in that industry were lower than rates in any other industry.

The conclusion to be drawn from these data is clear. Since the relative positions of Northern industries are subject to only minor variation over the period surveyed, it may be inferred that differentials among these industries are persistent.

TABLE 27

DISTRIBUTION OF RANKS OF AVERAGE HOURLY ENTRANCE RATES OF MALE UNSKILLED
LABOR IN THE NORTH: 1926-1937

Industry	Final Rank	Range of Ranks	Number of years in which rank was equal to final rank	Number of years in which ranks differed from final rank by:			Total number of years in which rank was within 3 of final rank
				1	2	3	
Lumber	1	1-6	9	0	0	0	9
Brick, Tile and Terra Cotta	2	1-5	5	5	1	1	12
Foundries and Machine Shops ..	3	2-9	2	5	1	0	8
Electrical	4	3-8	0	3	4	1	8*
Cement	5	2-10	0	2	3	4	9
Paper and Pulp ...	6	3-8	1	6	4	1	12
Meat Packing	7	3-9	0	3	5	2	10
Iron and Steel	8	3-10	4	3	2	2	11
Leather	9	3-11	0	4	2	1	7
Public Utilities	10	2-11	1	7	1	1	10
Automobiles	11	8-13	2	4	4	2	12
General							
Contracting	12	10-13	2	9	1	0	12
Petroleum Refining	13	12-13	4	8	0	0	12

* Data for only 10 years available.

(B) PERSISTENCE OF DIFFERENTIALS WITHIN THE SOUTH

The relative wage rate positions of Southern industries for the same period are shown in Table 28. The reader will note that with the exception of two industries, Automobiles and Electrical Manufacturing, these industries are identical with those in the North. The actual wage data are to be found in Table 31.

Differences between industries in the South as reflected by their ordinal positions appear to be even more stable than differences in the North. Seven out of 11 industries (compared to 5 out of 13 in the North) maintained positions equal to or different from their final ranks by no more than 3 ranks in all of the 12 years. A similar record for 11 years was achieved

TABLE 28

DISTRIBUTION OF RANKS OF AVERAGE HOURLY ENTRANCE RATES OF MALE UNSKILLED
LABOR IN THE SOUTH: 1926-1937

Industry	Final Ranks	Range of Ranks	Number of years in which rank was equal to final rank	Number of years in which ranks differed from final rank by:			Total number of years in which rank was within 3 of final rank
				1	2	3	
Lumber	1	1-7	11	0	0	0	11
Brick, Tile and Terra Cotta	2	1-2	11	1	0	0	12
Foundries and Machine Shops .	3	3-8	1	8	1	1	11
Paper and Pulp ...	4	3-7	1	9	1	1	12
Cement	5	2-8	2	4	4	2	12
Public Utilities	6	3-9	2	1	3	6	12
General Contracting	7	3-9	0	5	6	0	11
Leather	8	5-9	2	7	2	1	12
Iron and Steel	9	6-10	3	6	2	1	12
Meat Packing	10	6-11	8	3	0	0	11
Petroleum Refining	11	10-11	11	1	0	0	12

by the remaining 4 industries. Note, moreover, that 3 industries, Lumber, Brick, Tile and Terra Cotta, and Petroleum Refining, occupied a rank equal to their average ranks in 11 out of 12 years. One may, therefore, conclude that within the South, as within the North, differences in wage rates are of a stable and enduring sort.

Since the industries we are examining are the same, with two exceptions, in both regions, it will be interesting to see how close is the correspondence between the relative positions of each industry in both regions. For this purpose, the following tabulation shows the final ranks of 11 industries in the North and South. The reader will observe that in order to make this regional comparison, the ranks of industries in the North were readjusted to allow for the omission of Automobiles and Electrical Manufacturing, the two industries that are incompletely reported in the South and consequently were dropped.

	Final Ranks	
	North	South
Lumber	1	1
Brick, Tile and Terra Cotta	2	2
Foundries and Machine Shops	3	3
Cement	4	5
Paper and Pulp	5	4
Meat Packing	6	10
Iron and Steel	7	9
Leather	8	8
Public Utilities	9	6
General Contracting	10	7
Petroleum Refining	11	11

The above comparison indicates that Lumber, Brick, Tile and Terra Cotta, Foundries and Machine Shops, Leather and Petroleum Refining have identical positions in both regions. For Cement and Paper and Pulp the difference between the two ranks is only one. The relative position of the Iron and Steel Industry in the South is only 2 ranks above its average standing in the North. In the case of Public Utilities and General Construction, the Southern branches of these industries is 3 ranks lower than the Northern divisions. The greatest disparity appears in the case of Meat Packing in which the average rank in the South is 4 higher than its average position in the North. On the whole, however, it appears that low wage-rate industries in the North are also low wage-rate industries in the South and contrariwise, industries paying comparatively high wage rates in the South also pay high wage rates in the North.

This suggests that differentials in wage rates cannot be explained solely, or even largely, in terms of differences in geographical location of industries, for in the present instance, this variable is eliminated. Translated in terms of a single industry, this means that Lumber is not a low-wage rate industry because it is located in the South, for it is also a low-wage rate industry in the North. The proper inference would seem to be that the conditions tending to depress wage rates in this indus-

try are operative in both regions. The nature of some of these conditions have already been examined in Chapter III; the operation of additional factors will be discussed in Part II of this study.

(C) PERSISTENCE OF DIFFERENTIALS BETWEEN REGIONS

Having established the existence of persistent differentials in average hourly entrance rates *within* regions, the question may now be raised whether the same situation exists *between* these regions. Since only two regions are available, it will be statistically undesirable to apply the method thus far used as a test for persistence of differentials. As an alternative three other tests are used, and if the results are decisive in each test, we can be confident that there are persistent wage rate differ-

TABLE 29

AVERAGE HOURLY ENTRANCE RATES (IN CENTS) OF MALE UNSKILLED LABOR IN THE NORTH AND SOUTH, JULY 1ST, 1926-1937 *

Year	Average Hourly Entrance Rates		Percent South of North
	North	South	
1926	.456	.315	69.0
1927	.462	.314	67.9
1928	.480	.301	62.7
1929	.466	.312	67.6
1930	.459	.312	67.9
1931	.445	.284	63.8
1932	.413	.229	55.4
1933	.375	.247	65.8
1934	.457	.356	77.8
1935	.480	.343	71.4
1936	.461	.334	72.4
1937	.553	.389	70.3
12 Year Average	.459	.311	67.9

* The wage rates for 1935, 1936, 1937, are weighted averages computed by the Bureau of Labor Statistics. For earlier years, the writer calculated the regional wage rates by weighting the average wage rate in each district by a value based on the average number of workers covered in that district between 1926 and 1937. These values are: New England 2, Middle Atlantic 7, East North Central 10, West North Central 4, Mountain 1, Pacific 3, total North, 27. In the South: South Atlantic 2, East South Central 1, West South Central 1.5, total South 4.5.

entials between the North and the South. The three tests involve first, a comparison of average hourly entrance rates of all industries in the North with those of all Southern industries; second, a comparison of average hourly entrance rates of the highest Southern district with average rates of the lowest Northern district; and third, an examination of wage rates in the Northern and Southern divisions of each industry.

(1) The average hourly entrance rates of unskilled labor in the North and South for each year from 1926 to 1937 are shown in Table 29.

It will be observed that wage rates in the North are consistently higher than Southern rates. This is especially interesting in view of the fact that years of depression as well as 'good' years are included. Furthermore, the reader will note that the margins are large, about 30 percent on the average. This suggests that differences in average hourly entrance rates between the two regions are persistent, even though the observations are for but a single day in each year.

(2) Table 30 shows the average hourly entrance rates in the highest Southern district and the lowest Northern district for the same period.

TABLE 30
AVERAGE HOURLY ENTRANCE RATES (IN CENTS) IN THE HIGHEST SOUTHERN DISTRICT AND LOWEST NORTHERN DISTRICT, 1926-1937

Year	Highest Southern District	Lowest Northern District
1926	.328	.401
1927	.330	.410
1928	.338	.413
1929	.356	.418
1930	.330	.406
1931	.299	.429
1932	.237	.358
1933	.357	.345
1934	.341	.432
1935	.359	.446
1936	.344	.436
1937	.408	.495

TABLE 31
AVERAGE HOURLY ENTRANCE RATES OF MALE UNSKILLED LABOR (IN CENTS) BY INDUSTRY
AND REGION, JULY 1ST, 1926-1937

Industry and Region	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937
Automobiles	N 453 S	442	508	516	475	589	553	433	508	611	467	554
Brick, Tile and Terra Cotta	N 408 S 282	409	423	415	417	371	334	295	391	405	405	484
Cement	N 414 S 289	424	416	408	415	391	323	161	298	316	227	319
Electrical	N 420 S 400	280	279	291	293	286	322	234	468	467	476	553
Foundries and Machine Shops	N 413 S 289	420	435	432	418	419	238	342	344	362	347	414
Iron and Steel	N 431 S 331	400	425	424		370	366		438	429		
Leather	N 463 S 321	472	471	475	465	448	345	316	436	440	444	504
Lumber (sawmills)	N 384 S 241	378	369	366	370	327	259	227	353	354	360	387
Paper and Pulp	N 429 S 288	428	433	432	431	397	279	341	362	435	463	546
Petroleum Refining	N 530 S 435	530	516	514	298	170	146	129	246	240	224	245
Meat Packing	N 416 S 387	418	419	425	417	397	365	341	416	431	434	511
Public Utilities	N 433 S 317	423	436	439	449	393	216	201	326	335	340	396
General Contracting	N 496 S 333	532	516	513	504	507	461	458	529	560	563	642
		328	301	304	308	377	347	349	480	472	485	563
						406	347	325	445	465	468	582
						386	324	301	373	392	356	474
						447	442	422	447	456	466	497
						330	288	267	322	327	337	375
						481	435	433	493	502	552	636
						279	238	234	364	370	387	382
Total:	N 456 S 315	462	480	466	459	445	413	375	457	480	461	553
		314	301	315	312	284	229	247	356	343	334	389

Again we notice that the average hourly entrance rate in the highest Southern district was never larger than the average hourly entrance rate of the lowest Northern district. The hypothesis that there are persistent differentials between the North and South again seems to be verified.

(3) The data for the third test are presented in Table 31, showing the average hourly entrance rates in the Northern and Southern divisions of 13 industries for the same 12 year period. A word of caution is in order with regard to the use of this table. The regional rates for each industry for each year were obtained by computing the arithmetic average of wage rates in 6 districts in the North and 3 districts in the South. It was impossible to weight each district appropriately because the Bureau of Labor Statistics does not reveal in its sample the number of workers covered in each district by industry. The sample merely shows the total number of workers covered in the entire district. For this reason, the absolute amounts of the average hourly entrance rates are subject to error, and similarly the absolute differences between the Northern and Southern divisions of each industry. However, for the purposes of the present test, this deficiency is not serious. The computed rates in Table 31 are believed to be sufficiently reliable for testing whether Northern wage rates are higher or lower than Southern wage rates in each industry.

The figures indicate that in 11 industries average hourly entrance rates in the North in every year were higher than the wage rates in the South. Automobiles, which is not an important Southern industry, shows higher wage rates in the South (mainly Baltimore) than in the North in 1932 and 1933. As a result of these three tests, one may conclude that differentials in average hourly entrance rates between the two regions are stable and persistent.

3. DISPERSION OF AVERAGE HOURLY ENTRANCE RATES IN THE NORTH AND SOUTH

Regional differences in wage rate dispersion may be examined by comparing the coefficients of variation for the North and South. These coefficients of variation, it will be recalled, reflect the magnitude of both long-run persistent differentials in each region as well as the shorter-run industrial differences in demands for labor. Table 32 is a tabulation of these coefficients of variation.

TABLE 32
COEFFICIENTS OF VARIATION IN AVERAGE HOURLY ENTRANCE RATES
FOR THE NORTH AND SOUTH, 1926-1937

Year	Coefficients of Variation (%)	
	North	South
1926	8.4	14.4
1927	9.7	15.7
1928	9.4	19.0
1929	9.6	13.5
1930	8.5	16.0
1931	14.2	20.8
1932	18.3	48.3
1933	15.7	35.3
1934	9.9	13.3
1935	12.2	15.3
1936	9.2	19.2
1937	8.8	20.5
12 Year Average	11.2	20.9

To an earlier observation that Southern wage rates have been consistently lower than Northern wage rates, we may now add that Southern rates have been consistently less uniform. In 5 out of 12 years the coefficient of variation for the South was at least twice as great as that for the North, and in no year was the measure of dispersion less in the South than in the North. It will also be observed that the coefficient of variation doubled in the North between 1929 and 1932 whereas in the South the increase was more than threefold.

While the depression aggravated the lack of uniformity in wage rates in both regions, the effect of the NRA period (1933-1935) seems to have been in the opposite direction. Differentials in entrance rates narrowed considerably, for in the South the coefficient of variation decreased from 48.3 percent in 1932 to 15.3 percent in 1935, and in the North from 18.3 percent in 1932 to 9.9 percent in 1934. It may also be inferred that this narrowing of wage differences in the South was greater than could be maintained without the assistance of the minimum wage legislation, for note, that between 1935 and 1937, the post-code period, wage differences increased 34 percent in the South. In the North, on the other hand, the coefficient of variation continued to decrease after 1935. In Part II of this study and especially in Chapter VIII we shall attempt to set forth in some detail the characteristics of the labor market in each region that would appear to account for the observed differences in wage rate dispersion. It will there be argued that the explanation lies in the peculiar regional conditions of labor supply, demand for labor and imperfection in labor mobility.

4. SUMMARY

Two aspects of geographical non-conformity in average hourly entrance rates of male unskilled labor have been examined, their persistence and their dispersion over time. The tests applied to industries within each of 9 districts in the United States indicated that intra-district differentials were of a stable and enduring nature. Three other tests of persistence of wage rate differentials were then applied to the regional data. Here again the evidence revealed that average hourly entrance rates in the North have been consistently higher than the average hourly rates in the South. Lastly, using coefficients of variation as criteria of wage dispersion, it was observed that Northern wage rates have been considerably more uniform than Southern wage rates.

PART II

ANALYSIS OF WAGE DIFFERENTIALS

CHAPTER VI

GENERAL FACTORS BEARING ON WAGE DIFFERENTIALS ¹

I. INTRODUCTION

THE evidence presented in Part I of this study attempted to establish the hypothesis that wage differentials among unskilled labor are persistent. While it is believed that the data are consistent with this hypothesis, two types of limitations are inherent in the data. In the first place, although the group of workers studied was as homogeneous as the data allowed us to single out, it is not completely undifferentiated as to skill. It is altogether likely, therefore, that if a more refined grouping was observed in collecting the data, the size of the differentials among industries would be smaller than the present figures suggest. Secondly, in order to obtain data on annual earnings for unskilled labor, it was necessary to resort to estimation. While the computed estimates are believed to be adequate for the purpose of determining the stability of the ordinal positions of various industries, the absolute differences in annual earnings are subject to error. Nevertheless, it is believed that the hypothesis of persistence of differentials derived substantial support from our examination of the materials and that it deserves further investigation. The theoretical argument which follows brings additional support by adducing reasons, not advanced in traditional theory,² for believing that such differentials could be persistent.

¹ I am indebted to Moses Abramovitz for his assistance in formulating the argument of this chapter.

² It may be interesting to compare briefly the present analysis of wage differentials with that offered by neo-classical theory. First, as regards subject matter, the problem of wage differentials in neo-classical theory has usually concerned itself with those wage differences which appear between non-competing groups of labor. And here the discussion has centered about the ways in which the various social and economic barriers between these groups give rise to wage differences. (Cf. Taussig, F. W., *Principles*

The analysis will be formulated in terms of differences in annual earnings, for although a worker's decision to shift from one job to another may be influenced directly by differences in rates of wages or hourly earnings, he is not likely to move unless there is some expectation that by doing so he could raise his annual income. Nor is this association between hourly and annual earnings without justification, for as we have seen,³ there is in fact a close correlation between the two types of income.

The plan of the present chapter is as follows: we shall investigate in turn, what differentials in annual incomes are likely to arise among the homogeneous group of workers (1) if there were no movements of labor or capital, (2) if there were perfect mobility of either factor, (3) if there were limited labor mobility but no movements of capital, (4) if capital were imperfectly mobile and labor did not move, (5) if goods are sold under monopolistic conditions. In addition we shall examine briefly (6) the significance of employers

of *Economics*, Vol. 2, Chapter 47, Cairnes, J. E., *Some Leading Principles of Political Economy*, pp. 66-67, and Wicksteed, *The Common Sense of Political Economy*, p. 338).

Secondly, it has, for the most part, been assumed that within each of these non-competing groups (made up of workers who are of the same skill), competition is perfect and consequently wage differentials cannot persist, although temporary differences are possible. It is the validity of this assumption which is called in question in the present study and it is the operation of imperfect competition in a supposedly homogeneous labor market that will here be under review. One should add that Marshall and Pigou were well aware of the inadequacy of neo-classical assumptions especially with regard to competitive conditions in the labor market. However, inasmuch as they held consistently to the theoretical framework of perfect competition, the imperfections in the labor market which they recognized, were considered to be temporary phenomena which would eventually disappear and with their disappearance, wage differentials within non-competing groups would be eliminated.

While the present writer rejects the neo-classical treatment because it insists upon "assuming away" an important part of the problem, it must be admitted that the conditions which characterize a perfect market also point to the causes of the wage differentials actually found. It is in this respect that neo-classical analysis acts as a useful guide to a contemporary theory of wage differentials.

3 Cf. Chapter III, pp. 76-79.

personnel policies for the problem of wage differentials. Illustrative material bearing on these factors will be presented in Chapter VII. The same procedure is followed in Chapter VIII with respect to geographical wage differentials.

2. WAGE DIFFERENTIALS IF THERE WERE NO MOBILITY OF EITHER LABOR OR CAPITAL

Let us first imagine that the United States is divided into a number of closed areas,⁴ so that there are no labor or capital transfers among these areas. If the conditions of supply and demand for a given grade of labor and the state of competition were identical in all places, uniform wages for labor of the same skill would prevail everywhere. Furthermore, if changes in these underlying conditions take place at the same time and in the same manner, the identity of wages would be maintained at all times.

If, however, the basic economic conditions are not uniform in all areas, it is clear that wage differentials will appear. The conditions of supply and demand and competition peculiar to each area for a given grade of labor will determine the wage levels within those areas in a fashion whose main lines have been clearly sketched in economic literature. If no movement of either labor or capital occurs in response to the wage differential thus brought into being, it is obvious that differentials will be greater than if there were some mobility. The way in which mobility operates to reduce differentials is examined below in greater detail.

3. WAGE DIFFERENTIALS IF THERE WERE PERFECT FACTOR MOBILITY

'Perfect labor mobility' may be defined as the willingness of large numbers of workers to move from relatively low-wage paying to relatively high-wage paying firms, industries or areas in response to an infinitesimally small difference in wages. Presented graphically, this would mean that if the wage dif-

⁴ The same analysis applies, of course, to firms or industries among which there are no movements of labor or capital.

ferentials between a given industry (firm, area) and some other industry (firm, area) are measured along the Y axis extending from zero to infinity and the number of workers willing to move are measured along the X axis, (from zero to the maximum number of workers subject to transfer) a 'perfect mobility' curve could be indicated by a line drawn horizontally to the X axis at the height marking a zero differential.

Given perfect mobility, it is clear that uniform wages of labor of a given skill must be established. This is merely another way of saying that the supply curve of labor to an individual firm, industry or area is, on this assumption, horizontal at the market wage.⁵ In other words, what we have been describing is a situation commonly recognized as one which would exist if competition among firms, industries, or areas were perfect. Workers move freely presumably because they have no preferences as to places of employment and there are no costs of movement. Under these conditions there will be, as Marshall states, ". . . a tendency [for] economic freedom and enterprise . . . to equalize efficiency earnings. . . ." ⁶

Up to this point mobility has been considered from the viewpoint of the labor supply. It is also true, that capital movements are sensitive to certain types of wage differentials. It is not essential for the present argument to determine whether there is more movement of capital than of labor in response to wage differentials, or *vice versa*. It will merely be assumed that there is a tendency for capital to move to relatively low-wage paying areas (firms or industries) in the case of new investment, or from relatively high to relatively low wage paying areas (firms or industries) in the case of a transfer of old investments.⁷

⁵ This does not mean that the mobility curve is identical with the supply curve of labor of this grade in the aggregate.

⁶ Marshall, A., *op. cit.*, p. 550. Cf. Pigou, *op. cit.*, Part III, Chapter 9 and Hicks, J. R., *The Theory of Wages*, p. 74. For a more extended treatment of the meaning of perfect competition see Robinson, J., *The Economics of Imperfect Competition*, p. 18 and Chamberlin, E., *The Theory of Monopolistic Competition*, Chapters 1, 2.

⁷ This does not imply that the ratio of capital to labor is not higher in relatively high wage areas (firms or industries).

'Perfect capital mobility' can then be defined as the willingness of substantial amounts of capital to move from high wage areas (firms or industries) to low wage areas (firms or industries) in response to an infinitesimally small difference in wages. Graphically this situation would be identical with that described above except that the mobility now in question is that of capital rather than of labor. If there were no labor mobility between certain areas but if capital were perfectly mobile in response to differences in wages between areas, it can easily be shown that wage differentials would be eliminated. Capital entering low-wage areas would bid for labor, thus causing wages to rise.⁸ If labor is to be reabsorbed in areas losing capital, wages must fall, thus establishing an equality between the two places.

Let us now suppose that there is perfect mobility of both capital and labor. It has already been shown that if either factor were completely mobile, wage differentials would be eliminated. Obviously, the same result would follow if both factors were perfectly mobile. The only new element in this situation would be that the adjustments would take place more quickly.

4. THE EFFECT OF IMPERFECT LABOR MOBILITY; CAPITAL IMMOBILE

If a given wage differential fails to get enough workers to move from a low-wage to a high-wage area (firm or industry) so that the differential is not eliminated, mobility is imperfect. Or stated otherwise, persistence of differentials involves a situation in which only a limited number of workers will move in response to a small difference in annual incomes.

This appears to be quite plausible. For if one considers a situation in which there are two industries paying different wages to men of the same skill, it is to be expected that in response to the differential, a certain number, but no more,

⁸ It is here assumed that workers are mobile between firms and industries within the same area, but not between areas.

will seek to move even if considerable time be allowed. This imperfect mobility may be the result of certain pecuniary costs of movement, imposed or natural preferences, ignorance of available opportunities, etc.⁹

As some workers move, the differential between the two industries is likely to be reduced, for the low-wage industry will raise its offer price in order to retain a sufficient supply of labor, while the high wage industry will in time find it possible to lower its wages because of the influx of new workers.¹⁰ Under these circumstances a point will be reached where no additional workers will move. The remaining differential will then be persistent.

This involves the notion that the number of workers who will shift from one industry to another, is a function of the wage differential. This number is not a flow per unit of time but represents the *total* number of workers who will shift in response to a given differential, even if that differential is assumed to be established for an indefinitely long period of time.

Let us suppose that there are two industries, A and B, between which workers are likely to move in response to a certain differential in annual earnings. In Figure 1 the number of workers who will shift from A to B is measured along the X axis, while the Y axis shows the differences in annual earnings between the two industries. (A is taken to be the high-wage industry and B, the low-wage industry.)

We shall assume that at a certain time workers in industry A enjoy a differential of \$200 per annum over industry B. This corresponds to a potential shift of 2,000 men from B to A as indicated by the mobility curve, M_1 in Figure I. The reader will observe that there are some workers who will move when

⁹ These factors are defined and discussed in greater detail in Chapters VII and VIII.

¹⁰ Even if the low wage industry did not raise its wage, the differential would eventually be reduced by the decline in the wages offered by the high wage industry.

the differential is less than \$200 (since the mobility curve begins at the intersection of the two axes). As they do so two changes will take place. First, the differential will fall for industry A will gradually lower its wages while wages in industry B rise to take account of the new supply situation. Secondly, the mobility curve will shift upwards and to the left. For the men with the lowest transfer price have already moved from industry B to industry A, and fewer men will now respond to a differential of a given size. It will now take a larger differential to cause any given number of workers to shift from industry B to industry A.

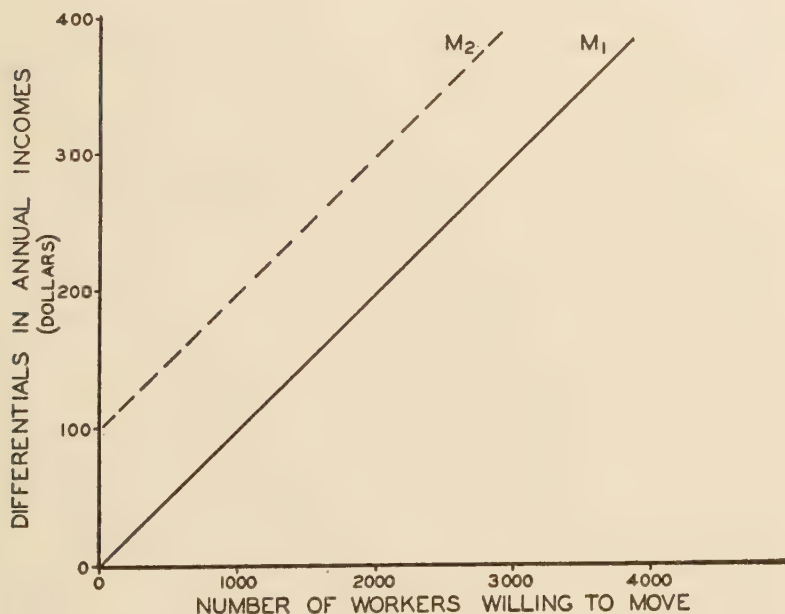


FIG. I

Suppose then that with a transfer of 1,000 men the differential is reduced to \$100. We can see from Figure 1 that no further shifts will take place at this differential. For when 1,000 men have moved from industry B to industry A, the mobility curve will have shifted to M_2 and at this point, a differential of \$100 no longer finds men in industry B to whom

this is sufficient inducement to move. In this new situation, in order to obtain a transfer of 1,000 men, the differential would have to be \$200; for 2,000 men to move, the differential must be \$300, and so forth.

This argument has so far assumed that throughout both industries, the wages paid are equal to the marginal net products of the men employed. This would be true, of course, only in a situation where goods are sold in competitive markets.¹¹ Furthermore it is here postulated that the shifting of workers causes wages to rise in the one case and fall in the other as a result of the changing supply situation in each industry.

This analysis has certain implications for the general theory of wages and wage differentials which can most easily set out by describing a general equilibrium situation in the market for labor of a given grade. (We shall assume that the prices of all other factors of production are given).

Suppose that the market opens with all industries paying the same wage per annum. Then, in accordance with people's initial location, tastes, preferences, etc., a certain number of people will offer themselves for work in each industry. Now in some industries, wages will be lower and in some, higher than the marginal productivity of labor. In the first case, wages will be bid up for it will be profitable to hire more workers. In the second group where wages are above the marginal productivity of labor, wages will fall and by different amounts depending upon the demand and supply conditions in each industry taken by itself. In response to the differentials which emerge after these adjustments, some workers will shift between industries until in each industry: (a) wages are equal to the marginal net product of labor and (b) the number of workers who are hired are equal to the number who offer themselves for work. Since labor is only imperfectly mobile, it may be inferred from the argument outlined above, that even

¹¹ In Section 5 we shall argue that wages are probably not equal to the marginal productivity of labor where goods are sold under monopolistic conditions.

in an equilibrium situation, differentials in annual incomes are likely to persist.

It can now be shown that the following factors will affect wages in a given industry and therefore the differentials as between industries.

(1) The supply of labor *within* a given industry, defined as the number of workers who offer themselves for work at different wages (wages elsewhere being given) from among those attached to the industry. We shall postulate that the conditions of transference (as indicated by the mobility curve) and the demand in two industries are given in the general fashion set out above. Let it now be supposed that there is an increase in the supply of workers in industry B. Then two changes already indicated will now take place: wages in industry B will fall and the differential between industry B and industry A will increase, say, from \$100 to \$150.

A certain amount of labor transference can now be expected to take place, causing the differential to fall again. It is quite possible that when 250 additional men have shifted, pushing the mobility curve upward to M_3 (Figure II), this shift will have pulled wages down in industry A and up in industry B so that the differential is finally no larger than \$125. Again we have a position of stability: a persistent differential which is insufficient to cause any further transfer of workers between the two industries. The new mobility curve is then indicated by M_3 and the old by M_2 in Figure II.

The following factors in each industry would have analagous results:

(2) the conditions of mobility (or transference). A change in these conditions will alter the shape and position of the mobility curves and thus affect the differentials which will persist between industries.

(3) the conditions of demand in each industry.

(4) As a corollary, the following factors which together determine the demand for labor in each industry

- (a) the demand for various products
- (b) conditions of competition in the buying of labor and sale of goods
- (c) the amount of capital installed in each industry.

Of these, the amount of capital installed in various industries merits particular attention for it is subject to transference in response to wage differentials, just as labor is. This problem will be dealt with in the following section.

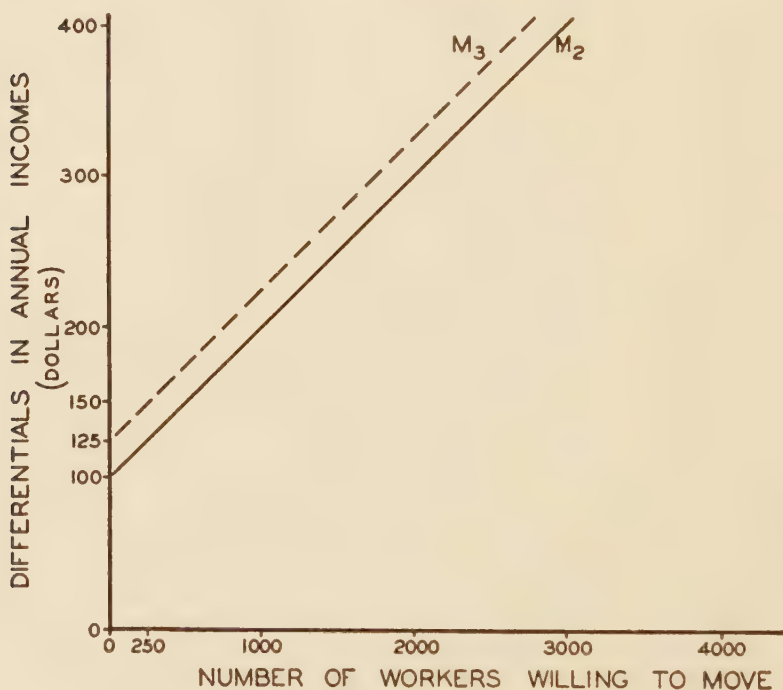


FIG. II

5. THE EFFECT OF IMPERFECT CAPITAL MOBILITY; LABOR IMMOBILE

The analysis just presented can be applied with slight modification to a situation in which there is no movement of workers between industries and areas in response to wage differentials

but in which there is limited or imperfect capital mobility. For in the case of capital, differences in wages paid to labor are important insofar as they affect differential rates of profit in various industries or between different geographical divisions of any given industry. For the most part, it is probably the latter situation in which differentials in wages are most significant. For if the costs of transportation of finished products are negligible so that different geographical sections of an industry are more or less in direct competition with each other, differences in labor costs may have a marked effect on differential rates of profit. It is this situation which is now considered.

A mobility curve of capital can be drawn showing the amounts of capital that will move from one sector of an industry to another in response to certain differentials in wages. As in the case of labor, the curve will be positively sloped indicating that a small difference in wages will cause only a small amount of capital to shift, and as the differential widens, this amount will increase. It will not be necessary to go through all the steps involved in reaching an equilibrium situation, for they are essentially the same as those indicated in the previous section. In brief, as capital shifts from high to low wage sectors of an industry, wage differentials will narrow because the new capital entering the low-wage areas must raise its offer price above the existing level in order to attract workers. Furthermore, since the demand for labor declines in the industries losing capital, wages in these industries must fall. This situation will continue until in equilibrium all sectors of the industry are paying wages equal to the marginal productivity of labor (assuming that goods are sold in competitive markets) and the prevailing differential is of such a magnitude that it is insufficient to cause any further movements of capital.

The real differences in the analysis of the labor and capital sides of the market lie in the causes of restricted mobility in each case. To go into these causes in the case of capital movements (as we intend to do in Chapter VII for workers) would

be beyond the scope of this essay. But one quite obvious cause restricting the mobility of capital between industries and regions is the monopoly positions already attained by established firms.

6. WAGE DIFFERENTIALS WHERE GOODS ARE SOLD IN MONOPOLISTIC MARKETS

The argument in Sections (4) and (5) was based on the assumption that where industries or firms sell their products in competitive markets, wages in equilibrium would be equal to the marginal productivity of labor. For in this situation, an industry's demand curve for labor represents the marginal productivity of labor when this is computed by multiplying the marginal physical product by the price at which the physical product sells. In a monopolistic industry, however, wages are determined not by the aggregate demand and supply curves (which in this case represent average revenue from the sale of goods and average costs of hiring workers but by the marginal revenue from sales and by marginal costs of hiring workers, as shown in Figure III. Wages in a monopolistic industry would then be BA with OA workers hired. If the industry were competitive, PX wages would be paid and OX workers employed. It can be seen, therefore, that in this case wages would not be equal to the marginal net product of labor but rather, that they would bear some relation to it,¹² and in general lie at a lower level.

What effect would this situation have on wage differentials between industries, places, or firms, each of which may be selling their products in monopolistic markets? Given perfect factor mobility so that either men or capital or both, would move in response to the appearance of any differential, no differences in income are likely to persist even though goods are sold monopolistically. This situation differs from the one in which goods are sold in competitive markets in that in equilibrium wages in different industries, places or firms will not

12 For a more extended discussion, see Robinson, J., *op. cit.*, pp. 270-272.

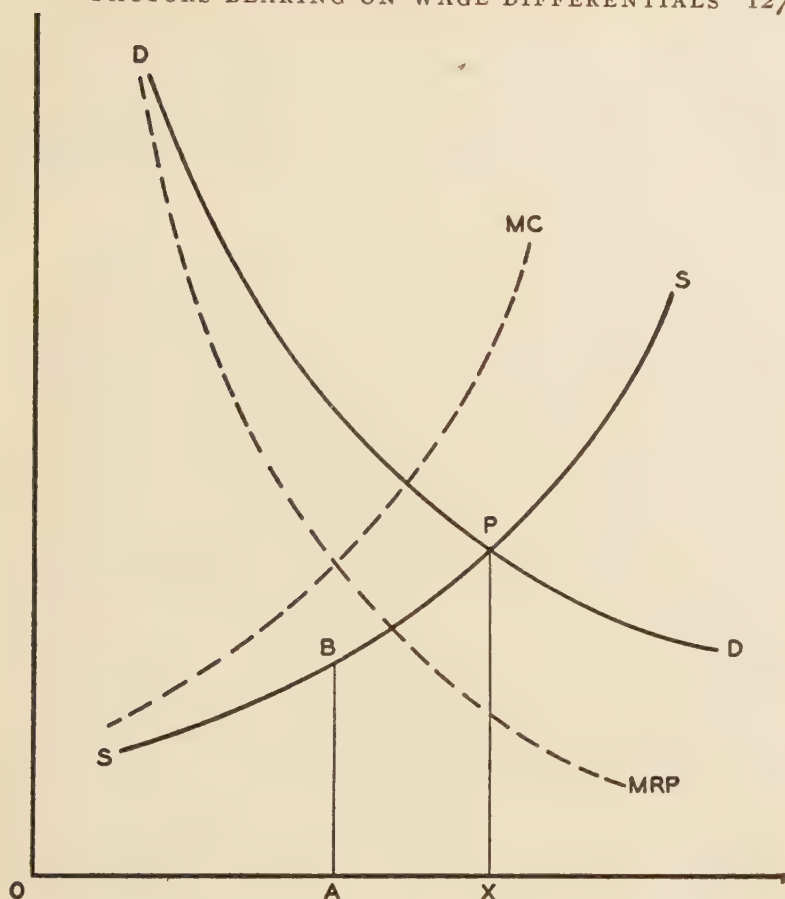


FIG. III

be identical with the marginal productivity of labor, but will in general be lower.¹³

If, however, factor mobility is imperfect, persistent differentials will prevail for the same reasons set out above in Sec-

¹³ Mrs. Robinson suggests that "a monopolist must necessarily be a monopsonist of the factors he employs." *Op. cit.*, p. 227 (*italics mine*). The present writer is in agreement with this statement only on the condition that the labor market is imperfect (that is, that there is imperfect factor

tions (4) and (5). It is impossible to determine offhand whether the equilibrium allocation of workers in this case would be different from that where goods are sold competitively. All that can be suggested is that there is a probability that this will be so since wages in different industries would not be the same.

7. SIGNIFICANCE OF EMPLOYERS' PERSONNEL POLICIES

In the following chapter the nature and operation of various types of personnel policies are examined in some detail. At this time it will be sufficient to point out that these policies refer to the various methods, such as group insurance, housing, relief, medical services, profit sharing, etc., adopted by employers to reduce labor turnover and insure to themselves a stable labor force, to reduce competition for labor and to ward off union organization. These are by no means the only reasons for the adoption of these plans, but they are admittedly among the most important.¹⁴

Of what significance are these personnel policies for the problem of wage differentials? It has been common practice to treat competition in the labor market as rivalry among workers for employment, each worker seeking to be hired by those firms offering the highest wage. If competition is not perfect because of limited labor mobility, this has usually been attributed to those acts or habits of workers which impede mobility. On the other hand, competition among employers for labor has more or less been regarded as a passive matter. By 'passive' we mean that employers in bidding for labor do nothing except offer higher wages to influence a worker's decision as to the choice of his employment.

mobility). If the labor market is perfectly competitive so that workers are willing and able to move as soon as any wage discrepancy appears, it is difficult to see how the sellers' monopoly power can be effective in the labor market.

¹⁴ Cf. National Industrial Conference Board: Administration of Personnel Policies and Programs.

However, employers are not passive but active factors in the labor market. The wages they offer will certainly affect the number of workers who will be attracted to them. But this is not all. Persuasion, peaceful or coercive, is often used. Substantial inducements of a non-monetary sort, such as would be classified under personnel programs or welfare activities are frequently employed. By these methods employers hope to reduce the mobility of labor, that is, they hope to reduce the number of men who would be attracted away from their employment by the prospect of better wages elsewhere. With the 'loyalty' of workers or the stability of the labor force so enhanced, it would then require a substantially larger wage differential to cause movements of workers away from these firms. In terms of the mobility function, the curve becomes more and more steeply sloped. The more successful a personnel program, the less mobile are workers likely to be.

What will be the effect of these plans on wages and wage differentials? The supply curve of labor to firms operating under these plans will become less elastic. Wages can fall relative to those paid in other firms without causing an exodus of workers, at least in such large quantities as would be the case if there were no other inducements for workers to stay. On the other hand, if the stable labor force is sufficiently large to satisfy the increases in demand for labor, only a small advance in wages will be necessary to get any additional supply. If employers had to attract workers away from other firms in order to satisfy their peak demands, the offer price (or the transfer wage) would naturally have to be higher than in the case where they merely have to call upon their own reserves.

It is difficult to gauge the effect of such policies on wage differentials between firms. For suppose that two firms are both acting in this manner to increase the stability of their labor force. The mobility curves of labor in both cases may become steeper and the wages paid lower in both. It can only be guessed that the differential between the two firms may be different than it would be if welfare policies were not in

effect. It is also possible that the effect of personnel programs is to change the differential in favor of workers employed in firms or industries *not* using these methods. Of course, the value or usefulness of these methods cannot be decided entirely on this criterion alone. Insofar as they increase the stability of employment, or make for more satisfactory conditions of work, these gains may offset, from the worker's as well as from the public point of view, the resulting lower level of wages.

CHAPTER VII

THE CAUSES OF IMPERFECT LABOR MOBILITY

IN the preceding chapter an attempt was made to explain in the most general terms the reasons for the appearance of persistent wage differentials among a homogeneous group of workers. It was there suggested that the strategic factor making for wage variability was the phenomenon of imperfect factor mobility. The present chapter continues this inquiry by investigating in somewhat greater detail one aspect of factor mobility—the impediments to a free mobility of labor. Before doing this, however, a critical examination of the data on movements of labor is undertaken in order to determine whether any objective measure can be given to the mobility function. This is followed by a discussion of a number of important obstacles to labor mobility: (a) costs of movement, (b) labor preferences, (and in this connection we will examine the part played by seniority regulations, lay-off policies, recruitment techniques, personnel and welfare programs and social legislation), and (c) information in the labor market. Since this problem has received frequent treatment in the writings of many economists, it is not the purpose of the present chapter to review their work in detail. The much-discussed factors bearing on imperfect labor mobility are mentioned only briefly, e.g. pecuniary costs of movement. More attention will be devoted to those factors which have been in the main neglected or have been handled, in the opinion of the present writer, more summarily than they deserve.

I. MEASURES OF LABOR MOBILITY

The significance and usefulness of the present study would be enhanced if it were possible to obtain a quantitative evaluation of mobility functions. Are there any objective data which would indicate how many workers will move from one firm (place or industry) to another in response to certain wage

differentials? Two sources of data on movements of labor are examined below for this purpose.

First, there are labor turnover statistics published currently by the Bureau of Labor Statistics since 1929 for all manufacturing industries, and for a selected number of industries (20) since 1930. During the last two years these data have been published monthly, before that only quarterly. The monthly turnover rates (per 100 employees) are calculated by adding the quit, discharge and layoff rates to form the total separation rate and deducting from this sum the accession or employment rate.¹ Since we are interested only in the number of workers who are willing to move in response to a given wage differential, it would appear that the relevant data to use are the quit rates. However, two difficulties make this procedure impossible. First, the statistics refer to all employees and not to unskilled labor alone. Unless it could be established that quit rates for unskilled workers are the same as those for all employees, there could be little justification for using this material. Although the Bureau of Labor Statistics does not publish quit rates for different occupational groups, there is some scattered evidence from other sources which might be used for this purpose. Brissenden and Frankel have shown that unskilled labor has a higher quit rate than skilled labor.² The same conclusion was reached by Slichter in his study of factory labor turnover.³ However, the first study was made for the years between 1911 and 1915, and the second covered the World War period. It might be objected that since that time the character of occupational turnover may have changed and also that the war years (including 1919) were abnormal. The only recent study of movements of workers according to occupation, is the analysis of the transient unemployed made by the Works Progress Administration for the period between

1 See *Monthly Labor Review*, January, 1938, pp. 187-190.

2 *Labor Turnover in Industry*, p. 91.

3 Slichter, S. H., *Factory Labor Turnover*, Chapter VII.

January and April 1935.⁴ According to this report, it appears that both in the case of unattached persons and heads of families, unskilled labor formed the largest percentage of the total transient population. However, it is important to note that the WPA figures are not the same as turnover statistics; they merely indicate movements of certain groups of unemployed persons.

The second limitation of quit rate data is that there is no way of determining whether workers quit jobs because of higher wages offered elsewhere, or for other reasons. In other words, the problem here is the distinction between movement undertaken for the specific purpose of raising one's income, and movement which may be motivated by non-pecuniary considerations.⁵ A worker may quit a job but this may not be followed up by a search for employment elsewhere. Or he may leave because of wanderlust, desire for a vacation, ill-health, injury, laziness, etc.⁶ In many cases, workers may move without any reliable information of alternative employment opportunities. Obviously, if quit rate statistics are to be useful in interpreting wage differentials, some way must be found by which the motives involved in a workers' decision to move may be identified. This may perhaps always be beyond our capacities, but the awareness of its importance is essential in manipulating the data.

Population statistics are a second type of data showing the shifts of workers between different places. The same objections that were raised with respect to labor turnover data are here relevant. Population data are available for different age groups and for different races, but no comprehensive study has yet been made on an occupational basis, with the exception of movements of the farm population.⁷

4 The Transient Unemployed, WPA Division of Social Research, Research Monograph III, Washington, 1935, p. 110.

5 See above, Chapter VI, pp. 115-117. 6 Cf. Slichter, *op. cit.*, Chapter VIII.

7 See Goodrich and others, *op. cit.* Appendix A. Changes in migration are here determined from birth-residence statistics for different age groups

Secondly, as in the case of quit rate data, the causes of population movements cannot be attributed entirely to economic considerations. Even though there may be strong reasons for believing that the economic motive is most important, one cannot argue that shifts in population can be interpreted entirely along these lines.⁸ From this we are able to conclude that the available data on movements of people are not of the sort that can be used to indicate unambiguously the nature of labor mobility, as we have defined it. Labor turnover statistics and records of population movements as they now stand cannot therefore prove or disprove any hypothesis that is set up to explain the existence of wage differentials.

This constitutes a serious limitation upon the discussion which follows. Yet a study of some value is possible. Although objective measures of labor mobility are not yet available, it is still possible to investigate in a more general fashion the causes that give rise to imperfect mobility between individual firms, industries, and geographical areas. The causes of immobility are examined under the following headings: (a) costs of movement, (b) workers' preferences, natural and imposed and (c) information in the labor market.

and for native whites and native Negroes. A good critique of rural-urban migration is found in *Research Memorandum on Internal Migration in the Depression*, by Warren S. Thompson. "Social Science Research Council," *Bulletin No. 30*, 1937. Thompson's analysis is based on the 1935 Census of Agriculture, Chapter IV, Volume III, "Population, Dwellings, and Labor on Farms." See also, *Landlord and Tenant on the Cotton Plantation*, WPA Division of Social Research, Research Monograph V, Washington, 1936.

8 Cf. Thompson, *op. cit.*, p. 7, "In general, it appears that the chief reason for migration of all kinds, international, interregional, intersectional and even, to a certain extent, local migration, is the desire to better the economic situation of the migrating group or individual. After making such a statement, one should hasten to add that many individuals and groups have moved from their native homes to new locations because of other reasons, reasons which are as various as the interests of man in achieving a more satisfactory mode of living." Cf. Thomas, D. S., "Research Memorandum on Migration Differentials. Social Science Research Council," *Bulletin No. 43*, p. 141.

2. COSTS OF MOVEMENT

Much has been written about the influence of costs of movement on wage differentials so that only a brief summary will be necessary at this time.⁹ Costs of movement are taken to mean only those expenses that have a specific money value. (Non-pecuniary costs will be treated in some detail in Section 3.) These monetary costs include, among other things, expenses involved in seeking new employment, transportation costs, and loss of wages during transitional periods of unemployment. It is clear that if costs of movement are the only consideration influencing a worker's choice of employment, they would be sufficient to account for the appearance of short-run as well as persistent wage differentials. So long as a worker believes that the costs of movement are greater than the expected gains, he will not move.

It is important to note that costs of movement may be aggravated by certain policies of employers. In planning the location of a factory, for example, it may be specified that "there should not be a large number of other industries which would compete for labor."¹⁰ Or in other situations, new firms may be prevented from entering a city in order to minimize competition for labor.¹¹ In either case, costs of movement are likely to be enhanced, because workers would have to go farther afield in order to seek alternative employment.

⁹ Cf. Pigou, *op. cit.* It is important to note that Pigou's analysis is based on the assumption of perfect competition whereas the present study presents these factors as chronic imperfections in the labor market.

¹⁰ Starnes, G. T. and Hamm, J. E., *Some Phases of Labor Relations in Virginia*, p. 5.

¹¹ Lynd, *Middletown in Transition*, p. 80. Lynd states that "the X influence had at one time blocked the entry of a Ford plant into Middletown in order to avoid the competition of the higher Ford wage scale." This policy of exclusion, however, could not be maintained successfully. After several years, the infiltration of new industries caused Middletown to be subject to "hammering competition." And "confronted by this situation, the uneasy city is following the most obvious and easiest course of elevating its sole remaining asset of a wage differential into a civic slogan—and passing the cost on to its citizens in the form of a lowered standard of living." *Ibid.*, p. 66.

3. INFLUENCE OF NATURAL AND IMPOSED PREFERENCES ON LABOR MOBILITY

Monetary costs are not the only reasons for imperfect mobility between firms. Workers, not unlike other human beings, have preferences, some of which are 'natural' others are 'imposed.' It is possible to think of these preferences as non-pecuniary costs of movement.

(A) NATURAL PREFERENCES

Natural preferences cover various types of likes and dislikes. It is obviously difficult to estimate the significance of these subjective considerations. For example, it is often suggested that workers favor small firms because of closer personal ties with employers. However, since labor turnover appears to be no greater in large than in small firms, it would seem that this is not a decisive consideration in causing workers to discriminate among different firms.¹²

Furthermore, in the United States where the labor supply is so heterogeneous, personal preferences are often motivated by racial prejudices. It is a moot question whether these prejudices are natural or imposed, but concerning their existence there can be no doubt. A case in point is the refusal of white workers to accept employment in firms hiring Negroes for the same occupation. This may cause white workers to accept lower wages from other firms, or what is probably more frequent, Negroes are faced with lower wage standards because of the limited range of alternative employments made open to them.¹³ For white workers these preferences may be 'natural', for Negroes they are undoubtedly 'imposed'.

Another important consideration which may be classified as a 'natural' preference, is the opportunity for family work.

12 Cf. Brissenden and Frankel, *op. cit.*, pp. 54-60. "Scientific" employment policies in large firms may compensate for the lack of personal relations.

13 See Landlord and Tenant, *op. cit.*, pp. 107-124. Negro tenants were found to be more stable than white tenants because of the fact that "there were relatively fewer opportunities for Negroes outside of agriculture."

This is especially important among low income groups, where the main breadwinner's earnings are insufficient to support the entire family. Here again, it is often difficult to determine whether the preference is entirely 'natural'. For example, employers in the cotton textile industry will frequently favor workers with dependents who could be employed in the mill. The admitted intention of the policy is to reduce labor turnover and form a labor pool or reserve to meet future demands for labor.¹⁴

(B) IMPOSED PREFERENCES

On this point some of the cruder forms of restriction of mobility are first discussed, after which the indirect but probably more effective methods of reducing labor mobility are considered. In the latter connection, we shall be concerned with the influence of seniority regulations, lay-off policies, recruitment methods, personnel and welfare programs, and social legislation.

(1) *Coercive Restrictions*

If we can conceive of a worker who is perfectly rational in his choice of employment, not burdened by ordinary costs of movement or attachments to places and persons, it is still possible that he would be found working at a lower price than he knows others of the same skill are getting simply because he is not welcome elsewhere. A recent survey of the United States Department of Labor showed that there was "a contradiction between the existing need for a free movement of workers and the widespread discrimination against the worker

¹⁴ *Monthly Labor Review*, June 1936, p. 1483, also *ibid.*, February 1938, pp. 322-333, "Wages, Employment Conditions and Welfare of Sugar Beet Laborers," p. 327. "The recruiting practices of the sugar-manufacturing companies have encouraged the use of family labor. Even in 1937, one sugar company of the Mountain States pointed out in a handbill addressed to prospective workers that 'work in beets is very convenient for families for the reason that they do not have to depend solely upon the wages of the father, inasmuch as all members 14 years old and over are able to take part in the work.' The practice of making contracts with heads of families is characteristic of the sugar-beet industry in Colorado, Wyoming, and Montana and in the beet growing states of the East."

who migrates. . . ." ¹⁵ Vagrancy laws are a common coercive measure restricting voluntary mobility. And occasionally, exodus from certain areas has been prevented by an actual show of arms, as a recent incident in the South indicated. ¹⁶

It might be argued, however, that these illustrations are but isolated cases. Even if such practices are rare, the fact remains that there may be such coercive activities designed to prevent certain groups of workers from taking advantage of more profitable employment opportunities. To be sure, it would be misleading to think that all imposed preferences are of a quasi-violent nature. Probably more common are those preferences whose imposition is more subtle but effective nevertheless. Let us examine these briefly.

(2) *Seniority and Layoff Policies*

In a large sector of American industry, whether operating under individual or collective bargaining, hiring, firing and promotion are influenced by a certain regard for the seniority

15 *Monthly Labor Review*, July 1937, pp. 3-16. "A Survey of Labor Migration between States." Also *ibid.*, June 1936, p. 1482, "Personal Policies in the Cotton Textile Industry." A recent study of the Alabama labor market showed that large numbers of employers refuse to hire migrants. Cf. *Characteristics of the Labor Market in Alabama Related to the Administration of Unemployment Compensation* by B. R. Morley, *Bureau of Business Research*, University of Alabama, pp. 58-66.

16 *New York Times*, September 16, 1937, p. 1. The headline reads: "Armed Farmers Hold Cotton Pickers on Job; Refuse to Let Negroes take Higher Pay Offer." "Following an alleged attempt by farmers of an adjoining county to entice Negro pickers away by offering higher wages, Sheriff G. P. Hogan of Warrenton confirmed reports that growers had fired their guns into the air 'just to show that they meant business.' With an acute labor shortage reported in many cotton-picking sections, Sheriff declared that the Warren County pickers were approached by Glascock County farmers 'and offered 75 cents a hundred pounds and a drink of liquor in the morning and evening' if they would move to Glascock fields. 'Our farmers just put a stop to it', the Sheriff declared. 'There was no trouble, although a number of them carried guns and fired them into the air. They told the pickers there was plenty of cotton to pick in Warren County and asked them to stay home and pick it. They decided to stay.' According to the Sheriff, Warren County farmers are paying cotton pickers 40 cents a hundred pounds 'which we think is good pay.'"

of workers. In its simplest form, seniority has usually meant that "men longest in the service of a company are the first to be promoted, and the last to be discharged. Conversely, the youngest men in point of service are the last to be promoted and the first to be demoted and discharged."¹⁷ However, as the seniority rule became more widely adopted, both its application and the conditions for preferential treatment were broadened. In many cases it now covers not only discharge, promotion and layoff but also transfers to new jobs and position of union representatives, especially shop chairmen. Furthermore, length of service is not the only criterion in determining seniority ranking. Efficiency or 'merit' is considered along with such factors as training, physical fitness, family responsibilities and place of residence.¹⁸

The effect of seniority rules on wage differentials is perhaps obvious but worth stating. First, it is clear that the rule acts to give certain workers an advantage from the point of view of annual earnings. Workers laid off under this arrangement will naturally suffer a longer period of unemployment and this would be reflected in the differentials in annual earnings. The seniority rule is then the opposite of a policy of work-sharing, for the latter may reduce annual wage differentials, whereas the former tends to aggravate them. Secondly, the existence of

¹⁷ Brown, J. Douglas and associates, *Railway Labor Survey*, Social Science Research Council, 1933, p. 104. The National Association of Manufacturers defines seniority as "special recognition given the individual worker on account of length of service." NAM Labor Relations *Bulletin*, July 23, 1937, p. 9.

¹⁸ An analysis of seniority provisions in labor contracts and in companies not functioning under union agreement is given in The National Association of Manufacturers *Bulletin*, *op. cit.*, pp. 9-15. Seniority regulations in earlier trade union agreements are found in United States Bureau of Labor Statistics *Bulletins* Nos. 393, 419, 448, 468 on "Trade Union Agreements." The attitude of the Railroad Labor Board on the seniority rule is shown in Ward, F. B., *The United States Railroad Labor Board and Railway Labor Disputes*, p. 37, and Wolf, H. D., *The Railway Labor Board*, p. 239. Cf. also Bloch, L., *op. cit.*, pp. 204-206, 323-324. The opinion of the Automobile Labor Board on layoff and rehiring is published in the *Monthly Labor Review* for May, 1934, p. 1062.

seniority rights is an effective impediment to labor mobility. In most cases, a worker's claim to preferential treatment is recognized only so long as he remains in the employ of a given firm. If he should seek employment elsewhere, he would lose his seniority rights. Consequently, these rights may deter movement of workers between different firms. If the wage differential is not large enough to compensate a worker for what he believes to be the value of his seniority ranking, he will not move.¹⁹

One should hasten to add that work-sharing would not be an adequate substitute for the seniority rule. Although it would appear that the effect of work-sharing is to equalize wages in a given firm, it would not have the same effect with respect to wages among different firms, for work-sharing also operates to make workers more attached to their present jobs. They are not likely to assume the risks of looking for work elsewhere when the chance exists that production will pick up and full employment will eventually be possible. In this respect, work-sharing like seniority rights immobilizes labor.²⁰

(3) *Methods of Recruiting Labor*

It has been a general policy among many American employers "to keep attached to them at all times pools of labor available for peak operations."²¹ We shall here be concerned only with the various recruitment methods which enable them to carry out this policy. At a later time, other means will be examined.²²

One can state with some assurance that if workers had full knowledge of employment opportunities and the means to take

19 Cf. Rountree, *op. cit.*, pp. 227, 273.

20 Cf. Daugherty and others, *The Economics of the Iron and Steel Industry*, Vol. I, p. 167.

21 Daugherty, *op. cit.*, Vol. I, pp. 188-9, Also *Monthly Labor Review*, December, 1933, pp. 1399-1406, "Longshore Conditions and Port Decasualization in the United States." Also see reference above, fn. 15, p. 138 on personal policies in the textile industry.

22 See below, (4) p. 142.

advantage of that knowledge, a policy to maintain reserve pools of labor would not be successful. The existence of these pools of labor is sufficient evidence, therefore, that imperfect labor mobility prevails. Let us examine some of the methods used to create such a situation.

Probably one of the earliest practices was that of contract labor. It is interesting to note that Goodrich calls contract labor "a by-product of the international immobility of labor."²³ When labor did not move fast enough in response to certain opportunities, it was, to use Goodrich's term, 'fetched'. The length of time workers had to serve to pay off the cost of their passage, was determined beforehand, that is, before they arrived in the United States. And it is certainly plausible to assume that the wages they were to receive, were agreed upon without their knowledge of what other workers of the same skill were getting. Furthermore, when workers of this type were brought over, they were not allocated in such a manner so as to assure them the highest wage possible. Cases in point are the periodic 'gluts' in the New York and Chicago markets which occurred with each new wave of immigration.²⁴ Lack of means and information undoubtedly prevented them from remedying their situation, at least for some time.

The history of the transfer of Negro and white workers from the South to the North follows a similar pattern. Various devices were used to attract them to Northern centers of industry, such as the use of high-pressure labor agents, advertisements in newspapers, and recruiting methods of employers associations. There is ample evidence to indicate that the numbers that were brought were larger than could be absorbed at that time.²⁵

²³ *Encyclopedia of the Social Sciences*, Vol. IV, article on "Contract Labor," pp. 342-344.

²⁴ Cf. Budish and Soule, *The New Unionism*, and Lescohier, *The Labor Market*, Chapter I.

²⁵ Daugherty, *op. cit.*, Vol. II, pp. 900-905; Goodrich and others, *op. cit.*, pp. 516-518; Henderson, L., *Report on the Automobile Industry*, p. 40; Woofter, T. J., *Negro Migration*, p. 117 and Bernstein, B., *Labor Market in the Automobile Industry* (mimeographed), WPA National Research Project

In brief, it is clear that these recruitment methods are instrumental in increasing labor mobility. Insofar as they raise a worker's economic status, they may be considered beneficial. Too often, however, they seem to be used to satisfy not only an existing demand for labor, but to provide a reserve of labor so that not all workers who are transferred are able to find employment. To the extent that this happens, the amount of mobility has been excessive, and further redistribution may be indicated. However, some of the newly arrived workers may not have the means to move again, they may not know of other opportunities, or the bait of future employment may be held out to them, or they may be held by other inducements.²⁶

(4) *Personnel and Welfare Programs*

In the preceding chapter it was argued that personnel and welfare programs had retarding effects on labor mobility. It was also suggested that the ability of a firm to pay wages at variance with what other firms are paying for the same grade of labor depends to a large extent on the control it maintains over its labor supply.²⁷ Let us now examine some of the characteristics of these welfare programs.

During the World War when competitive bidding for workers increased the rate of labor turnover and left some firms with a scarcity of labor, industrial relations programs were introduced on a large scale with the hope that they would increase the 'loyalty' of workers to particular firms and hence reduce labor mobility.²⁸ Their effectiveness in this respect is

on Reemployment Opportunities and Recent Changes in Industrial Techniques, January, 1937.

26 Daugherty concludes that "the net effect of the steel companies' employment, training, promotion and layoff policies was to give them practically absolute control over job opportunities. Being unorganized, the great majority of workers, had, as individuals, almost no way of challenging any abuse of this power." *op. cit.*, p. 189.

27 See above, pp. 128-130.

28 This was not the first appearance of these plans. Company housing, an example of one type of welfare plan, is almost as old as industrial history in the United States. See Caroline F. Ware, *History of New England*

indicated by the fact that these activities have been maintained ever since, although the depression following 1929 seems to have reduced their scale of operation. The National Industrial Conference Board comments that "the survival of industrial relations activities during the depression, notwithstanding the necessity for severe financial retrenchment, is a proof of their value to American industry."²⁹

These welfare activities designed to reduce labor mobility have many aspects. The National Industrial Conference Board classifies them as follows: group life insurance, unemployment insurance, accident, sick and death benefits, stock purchase plans, pensions, profit sharing, savings plans, loan plans, credit unions, home purchase plans, company housing, transportation facilities, restaurant and cafeterias, company stores, cooperative purchasing, legal aid, employment stabilization plans and vacations with pay.³⁰ To this group, company provision and administration of unemployment relief might be added.

Of these, company housing is one of the most prevalent types of welfare activities and from the point of view of the present problem, probably the most effective in reducing labor mobility.³¹ A government study conducted in 1916 showed that one-third of all employees in 400 establishments occupied company houses. Between 1920 and 1925, 71 percent of Southern textile workers, 61 percent of bituminous coal miners, 22

Textile Manufacturing and Shlakman, V., *Chicopee, Story of an Industrial Town*. For early Southern industry, see Mitchell, Broadus, *The New Industrial Revolution*.

²⁹ *Effect of the Depression on Industrial Relations Programs*, 1934, title page.

³⁰ *Ibid.*, p. 4. Also Daugherty, *et al.*, *op. cit.*, Vol. I, pp. 189-190, Vol. II, pp. 905-6. Daugherty notes the increase in these activities in the Iron and Steel industry during the code period of the NRA.

³¹ This is not the only reason for the establishment of company housing. Other motives are to overcome the lack of private housing, to secure the weapon of eviction in times of strikes, to attract married men, to create a collateral business and to secure public good will. See *Encyclopedia of the Social Sciences*, Vol. IV, pp. 115-118, article on Company Housing by L. Magnusson and *ibid.*, article on Welfare work, industrial, by H. S. Persons. Also Todes, C., *Labor and Lumber*, pp. 77 ff.

percent of Massachusetts cotton textile workers and 18 percent of anthracite miners occupied such houses.³² In 1934, 41 percent of cotton textile mills in the North and 96 percent of Southern mills were reported as providing housing facilities.³³ And in a more recent study of 95 iron and steel companies, it was shown that 60 percent of these provided housing accommodations.³⁴

The benefits to be derived from all types of welfare schemes, although variable from firm to firm, are undoubtedly attractive inducements to many workers. Feis, in his study of the Proctor-Gamble Company concludes that "the company is enabled to hold skilled and experienced men at somewhat lower hourly wage rates than it would have to pay were it not for the profit-sharing dividend payments."³⁵ However, the ability of firms to pay lower wage rates than are paid elsewhere, is only one important consequence of these plans. Another is that by participating in these various activities, it will often be difficult for a worker to change his place of employment. Daugherty remarks, in discussing the significance of these plans for workers in the iron and steel industry, that

It was almost always made clear to employees that they would lose the benefits provided under the various plans if they should leave their jobs, particularly if they should strike. From many employees who happened to get into debt for rent and food during the depression, there could be little or no freedom of action, and in so far as the workers were conscious of any paternalism or arbitrariness, the companies had failed to make the most of their opportunities for the cultivation of good-will. Under such circumstances, the loyalty of many workers must have been an enforced one, based on fear and insecurity.³⁶

32 *Encyclopedia of Social Sciences*, *op. cit.*, p. 116.

33 *Monthly Labor Review*, June, 1936, p. 1492.

34 Daugherty, *op. cit.*, Vol. I, pp. 189-192. Cf. Klein, P. and others, *A Social Study of Pittsburgh and Allegheny County*, pp. 65-79.

35 Feis, H., *Labor Relations* (1928), p. 129. Feis attributes part of the reduction in labor turnover between 1919 and 1926 to increased regularity of production as well as to the welfare and incentive plans.

36 *Op. cit.*, p. 190.

(5) *Influence of Social Legislation*

The way in which certain types of social legislation affect labor mobility can be set forth briefly. Opposition to state rather than national unemployment insurance plans was frequently made on the ground that some states would not enact such legislation and that this would decrease the mobility of labor among the various states. The fact that by the end of June 1937 all 48 states as well as Alaska, Hawaii and the District of Columbia had adopted such laws, minimizes the importance of this objection.³⁷ However, there are other objections to state plans which are directly relevant to the present problem.

The conditions under which workers become entitled to receive benefits vary in the different states. Residence or employment within a state is frequently specified as a requirement for eligibility. Unless some method is provided by which a worker who moves from one state to another can be credited with time worked in the first state, the loss in benefit rights may impede mobility.³⁸ Furthermore, the effect of the tax provisions of the Federal law which covers only employers of eight or more workers, was to establish a standard followed by a majority of state laws. Some states, such as New York, have broadened this coverage and admitted workers in firms hiring 4 or more employees while in 10 other states employers of one or more workers are included. Insofar as a worker can

37 *Monthly Labor Review*, September, 1937, pp. 583-584.

38 Two types of situations may be distinguished, that of the interstate and the multi-state worker. In the first case where a "worker . . . may have acquired full benefit rights in one state but who is living in another when he becomes unemployed", a plan is being proposed whereby one state will act as the paying agent for the state where benefit rights were accumulated. "But the probability of agreement or of an interstate compact in regard to the second type of worker is more remote in view of the great variety in the detailed provisions relating to eligibility, benefits amounts and duration, waiting periods, and disqualifications, and the presence of 'merit-rating' provisions in many laws." Burns, Eveline M., "Unemployment Compensation in the United States," *International Labor Review*, Vol. XXXVII, No. 5, May, 1938, pp. 23-24.

make a choice, he will surely favor employment in a firm subject to the obligations of a state law. Consequently, small firms may find it necessary to offer a wage high enough to compensate for this disadvantage in order to attract a sufficient labor supply.

A similar analysis could be made with respect to other forms of social legislation where benefits and obligations are not applied uniformly among different persons and places. For example, if workers knew their liability to physical injury in different places, and if they also knew the extent to which they would be compensated if an injury occurred, then the lack of uniformity in workmen's compensation laws could be used as a guide in discriminating among different places of employment. This assumes, however, that workers do have such information and that they have the economic ability to act on it. Both assumptions, however, are highly questionable. To this we now turn.

4. INFORMATION IN THE LABOR MARKET

Ignorance of market conditions may be considered a valid cause of imperfect labor mobility, for it is obvious that even though a worker may be willing to move in order to take advantage of a higher wage than he is at present receiving, he cannot do so if he is unaware that the opportunity exists. So long as ignorance is a factor of minor importance, its effect on wage differentials may be disregarded. But is this deficiency serious? On this point we cannot do better than quote Professor Slichter with reference to the ability of workers accurately to compare different occupations and different places of employment. He writes:

Much of the needed information is not available in any form and little of it is in such shape that workmen can easily use it. . . . Rarely are the figures (on wages and hours) from different industries brought together and compared. Most important, of all, these reports invariably omit comparisons between different plants. Not even the names of the enterprises supplying information are mentioned. Figures from individual plants are, of course, most essen-

tial, for, if competition is to perform the protective function attributed to it, wage earners must be able to choose accurately between employers as well as between industries and occupations.³⁹

Professor Slichter goes on to show that the same lack of information prevails not only with respect to data on wages and hours, but also concerning physical and nervous strains, liability to accidents and unemployment.⁴⁰

It is significant that these difficulties facing the most intelligent worker, are usually more restrictive or limiting than those facing employers in planning their hiring policies. A recent (1936) study of 60 leading companies in Michigan showed that these firms had developed a highly effective system whereby information on wages and working conditions for different occupations were exchanged.⁴¹ Rarely are workers' representatives invited to share in this knowledge. It is possible, then, for information to be decidedly one-sided so that the workers immediately involved are not benefited. Where workers are organized the trade union usually acts as a clearing house of job information. Since, however, collective bargaining is not universal, large numbers of workers do not have recourse to this alternative.

Some improvement in labor market information has taken place since Professor Slichter wrote his article. An attempt to publish data in a form such as can be understood by workers, has been made by the Bureau of Labor Statistics in its new

39 "The Organization and Control of Economic Activity" in *The Trend of Economics*, edited by R. Tugwell, p. 315.

40 *Ibid.*, pp. 316-7.

41 Riegel, J., *Wage Determination*. Another example of exchange of information among employers can be cited. Southern and Western Lumber Employers Associations have for a long time maintained clearing houses through which workers are hired. Todes in his study of "Labor and Lumber" claims that the clearing house has records of 110,000 applicants and that this information is used by 110 companies. Even if a worker should apply first at a firm's employment office or a private agency, his application must be endorsed by the clearing house before he is finally hired. The reason for the elaborate system (it is suggested) is to weed out "undesirables" and to make more effective the policy of blacklisting, *ibid.*, pp. 97-100.

monthly publication, *The Labor Information Bulletin*. In addition, there is the United States Employment Service set up under the Wagner-Peyser Act of June 1933 whose duty it is to maintain "a system for clearing labor among the several states." The effectiveness of these employment agencies naturally depends upon the extent to which workers and employers are educated to use them. The requirement that all persons receiving federal relief must register with these agencies, has undoubtedly assisted in this direction. Furthermore, since the Federal Unemployment Insurance Law requires participating states to administer unemployment benefits through similar agencies, an additional large group of workers will become familiar with its services. In the future, therefore, there is reason to expect that labor market information will be much improved. However, our observations refer to the past, and consequently the lack of information in the labor market may be considered as a contributing factor in perpetuating wage differentials.⁴²

In brief, this chapter has discussed three broad categories of causes of imperfect labor mobility—costs of movement, natural and imposed preferences and lack of information in the labor market. The operation of any one of these causal factors would be sufficient to account for the existence of imperfect labor mobility, and consequently, wage differentials. Since all of these factors are to some extent operative, the restrictions on a free mobility of labor are undoubtedly intensified.

⁴² It is interesting to note the diverse ways in which workers in different industries seek employment. An extreme type is found in the case of the full-fashioned hosiery industry in Philadelphia where the "workers are a group unto themselves. As with a college fraternity, one must be invited to join the trade or a particular skill. Most of the hosiery workers secure their positions because a friend 'speaks for them' in the firm where he is already employed or in a factory where he has had some previous connection." De Schweinitz, *How Workers Find Jobs*, p. 85. On the other extreme is the case of casual labor where workers usually traverse a large area without proper direction relying much upon hearsay about the demand for labor and conditions of work. Cf. "The Migratory-Casual Worker," Works Progress Administration, Division of Social Research, *Research Monograph VII*, Washington, 1937. Also, Parker, C., *The Casual Laborer* and a recent novel by Steinbeck, J., *The Grapes of Wrath*.

CHAPTER VIII

REGIONAL DIFFERENCES IN MARKET CONDITIONS

A GENERAL explanation of the causes of geographical wage differentials has already been presented in Chapter VI. The discussion in Chapter VII is equally relevant for the problem of geographical wage differentials in as much as the impediments to a free mobility of labor often involve geographical considerations. The purpose of the present chapter is to fill in some of the gaps left by the two preceding chapters. This chapter cannot therefore stand alone as an explanation of geographical wage differentials; it must be considered as supplementary to the discussion in Chapters VI and VII. The gaps to be filled are these: what are the peculiar regional conditions in the South which would account for the lower average wage rates among unskilled labor and the comparatively greater wage variability? In consequence, we shall discuss the regional differences in the demand for and supply of labor and competition. With respect to competition, we shall be chiefly concerned with its effect on differences in intra-regional mobility of labor.

A word concerning the scope of reference of the following argument. While the geographical data examined in Chapter V have described only average hourly entrance wage rates of unskilled labor, it is not possible to limit this discussion of regional differences in general economic conditions, to its specific effect on that particular grade of labor. However, since geographical wage differentials seems to be most pronounced among the least skilled workers,¹ it would appear that the following discussion which draws rather sharp regional contrasts, is not misleading.

1 "The extent to which average wages for entire industries in the South fall short of average wages in similar industries is determined by the relative proportions of skilled and unskilled workers employed. In industries which employ a high percentage of unskilled workers, as for instance in the saw-mill industry, the disparity in wage levels as between the South and the rest of the country is large. In the foundry and machine shop industry,

I. REGIONAL DIFFERENCES IN THE DEMAND FOR LABOR

It would be an impossible task to try to list all the factors that cause regional demands for labor to vary. As an alternative, three general groups of factors can be suggested which are sufficiently broad in scope to cover a wide variety of causes. These are (a) availability and utilization of economic resources including labor, capital and managerial ability, (b) diversification of industry and (c) growth of employment opportunities.

With respect to the first factor, the relative positions of the North and South have been ably summed up by Odum in his recent survey of the Southern economy in the following terms:

The Southeast is rich in all resources, physical and human, essential to the development of the highest culture. It does not, however, afford adequate facilities—science, invention, management, or organization and technology—for the development and utilization of either its physical or human wealth. Moreover, there is a large and unnecessary measure of waste, actual and potential, of both natural and human resources. In reality, therefore, the southern regions are deficiency areas in contrast to their abundance of potentialities.²

which employs a high percentage of skilled workers, the disparity between the South and the rest of the country is relatively small." Heer, C., *Income and Wages in the South* (Chapel Hill, 1930), p. 53.

The conditions observed by Heer for the years preceding 1928, seem to have changed little by 1933. The present writer calculated the ratio of wages per man-hour in 1933 for 15 leading industries operating in the North and South. In 7 industries (motor vehicles, not motor cycles, motor-vehicle bodies and parts, steel works and rolling mills, petroleum refining, paper, pulp, and cigars) wages per hour in the South were between 85 and 90 percent of those in the North; in 5 industries (flour, meat packing, cigarettes, tobacco, blast furnaces) the ratio was between 75 and 85 percent, and 3 (cane sugar refining, cotton goods, hosiery) showed ratios of 67, 73, and 65 percent respectively of wages paid in the North. (Based on Bureau of Census: *Man-Hour Statistics in 32 Selected Industries*, 1933).

Broadly speaking, it appears that in the industries requiring relatively more skilled workers, wages per hour in the South approximate more closely those in the North.

2 Odum, H., *Southern Regions of the United States*, p. 15. President Roosevelt in a letter to the members of the Conference on Economic Con-

The significance of this underdevelopment is clearly revealed in income statistics which may be taken as rough measures of labor productivity. In 1929 an estimate of per capita personal income for the entire population in the South Atlantic States was put at \$466 per annum as compared to \$907 for New England, \$476 for the West South Central States, \$1107 for the Middle Atlantic States, \$562 for the West North Central States and \$999 for the Pacific district.³ If a crude arithmetical average of these district per capita incomes is computed, the entire South shows a per capita personal income of approximately \$428, and the entire North, approximately \$845. Roughly then, the annual per capita personal income in the South in 1929 was only about 50 percent of that in the North. It is interesting to note that this ratio resembles very closely, the ratio of South to North based on average hourly entrance rates for unskilled labor.⁴

The comparatively low annual money income for the Southern population is undoubtedly influenced to a large extent by the predominance of the farm population. For the same year (1929) the per capita income estimate for the farm population in the South Atlantic States was only \$178, and for the non-farm population \$640. For both these groups, per capita

ditions in the South reflects this point of view by writing that the southern "task embraces the wasted or neglected resources of land and water, the abuses suffered by the soil, the need for cheap fertilizer and cheap power; the problems presented by the population itself—a population still holding the great heritages of King's Mountain and Shiloh—the problems presented by the South's capital resources and the absentee ownership of these resources, and the problems growing out of the new industrial era, and again, of absentee ownership of the new industries. There is the problem of labor and employment in the South and the related problem of protecting women and children in this field. There is the problem of farm ownership, of which farm tenantry is a part, and of farm income. There are questions of taxation, of education, of housing, and of health." Printed in "Report on Economic Conditions of the South" prepared for the President by the National Emergency Council, Washington, 1938.

³ Leven, M., Moulton, A. G. and Warburton, C., *America's Capacity to Consume*, p. 173.

⁴ See above, Chapter V, pp. 106-107.

personal income was considerably less than that received by the farm and non-farm population in the other districts. It is evident then, that the North, by comparison, has been more fortunate in the manner in which its economic resources have been utilized. However, one should not overlook the fact that within the North a number of 'deficiency areas' have appeared. Although the importance of these areas cannot be slighted (in part their loss has been the South's gain), it is nevertheless true that as a whole, the Northern states have been more productive than the Southern region.⁵

The second factor causing differences in regional demands for labor is the diversification of industry. Although industry has been expanding in the South since 1890, the region is still predominantly agricultural. In 1930 almost 44 percent of the gainfully employed population in the South were engaged in agriculture, as contrasted with somewhat less than 17 percent

⁵ Massachusetts has been cited as a growing deficiency area. Cf. Davenport, D. H. and Croxton, F. J., *Unemployment and Prospects for Reemployment in Massachusetts with Particular Reference to Manufacturing Industries*: 1936 Bureau of Research Studies No. 15 Harvard University. "The declining employment trends established between 1919 and 1929 in many manufacturing industries and the loss of population between 1920 and 1930 through emigration to other manufacturing states indicate that employment opportunities in Massachusetts reflects the more or less normal shifting of industry in response to changes in markets, in raw materials, in natural resources, in manufacturing technology and in types of labor required. But this is not all; Massachusetts has not merely been left in an exposed position by the temporary ebb of an industrial tide that may be expected shortly to flow back again through other channels, she has in many respects deliberately taken a position on such high ground in matters of taxation and labor legislation that numerous industrial navigators have perforce had to seek other waters to keep their craft from going aground." p. 67.

On the other hand some industrial areas in the North are periodically experiencing both an ebb and flow of business. Over a long period of years, it does not seem that in the City of New York, for example, there has been a net loss in industrial activity. Cf. Report to Hon. Frank J. Taylor, Comptroller of the City of New York on Industrial Survey of New York City by Charles E. Murphy, First Phase, December 30, 1936, Second Phase, March 30, 1937.

for the remainder of the nation.⁶ If Southern agriculture were prosperous, this would be a matter of little consequence. It is, however, a matter of common knowledge that poverty and not prosperity has long been characteristic of Southern farming.

Thirdly, this situation has been aggravated by the fact that the Southern population appears to have been increasing faster than job opportunities.⁷ The pressure upon agriculture for employment has therefore been intensified since in lieu of adequate industrial employment, agriculture has been the chief alternative. For the same reason, the existence of large numbers of persons eager to improve their economic status by transferring to factory or industrial employment has made it possible for Southern industry to obtain workers at wages lower than those paid in other parts of the country. Or in other words, the low wage in agriculture sets the 'transfer wage' for workers entering industry.⁸ Under these conditions, a wage which is only slightly higher than that received in agricultural pursuits has been sufficient to attract an adequate supply of workers into industry. And the fact that Southern industry is comparatively less diversified than Northern industry, has limited competition among employers for labor and consequently kept down the Southern industrial-agricultural differential.⁹

So long as employment opportunities continue to expand,¹⁰ it is possible that the transfer wage from Southern agriculture to Southern industry will increase. This assumes however, that

6 Douty, H. M., Wage and Hour Legislation for the South; *Southern Policy Papers No. 9*, Chapel Hill, p. 5.

7 Woofter, T. H. Jr., Southern Population and Social Planning, *Southern Policy Papers No. 1*, Chapel Hill, 1936.

8 Heer, *op. cit.*, p. 4. "In the South, as elsewhere, the earnings of factory workers are affected by the rewards offered in other occupations and by prevailing income standards."

9 The localization of Southern Industry has also been important in reducing competition for labor. See below, pp. 161-164.

10 Evidence of industry's expansion in the South is shown by Creamer's estimates of the percentage of wage jobs in the South as compared to the total number of wage jobs for the entire country. Of all wage jobs in the United States, 15 percent were found in the South in 1899, 15.8 percent in

the supply of labor does not change or that it increases more slowly than job opportunities. Under these conditions, heightened competition among Southern employers for labor may have the effect of narrowing the North-South differential, other things being equal. If however, the South continues to increase its supply of workers more rapidly than its supply of jobs, and if these workers remain in the South, the increase in the demand for labor may be offset by this additional supply. Furthermore, competition for industrial employment may increase if industry ceases to expand, if its growth is retarded, if Southern agriculture continues to be depressed and if migration to other areas is curtailed.¹¹

2. REGIONAL DIFFERENCES IN THE SUPPLY OF LABOR

The composition of the working population is a factor of primary importance in regional comparisons of labor supply. Population data indicate that there are relatively more children and women working in the Southeast than in the nation as a whole. Nearly 19 percent of children 10 years or under in the Southeast are found in gainful employments compared to 11.3 percent for the entire nation. For the Far West this percentage is only 5.1 percent, the Northwest 7.2 percent, in the Middle States 7.7 percent, in the Northeast 10.4 percent and 11.2 percent in the Southwest.¹²

The number of women and children at work does not indicate to the full extent their additions to the labor supply. If a comparison of the working time of 100 working women in Alabama or Florida and 100 women in New York were made, marked differences would undoubtedly be observed. For by the

1919, 18.2 percent in 1929, 18.4 percent in 1931, and 20.4 percent in 1933. *Op. cit.*, p. 316. The percentages for 1931 and 1933 are undoubtedly affected by the fact that employment seems to have been maintained on a higher level in the South than in the rest of the country during the last depression.

¹¹ One way in which migration may *reduce* wages is discussed below, p. —.

¹² Odum, *op. cit.*, p. 97.

end of 1935 Alabama and Florida had no legal limitations of daily working hours, whereas in New York an 8-hour limit had been set for many occupations. While other Southern states provide some legal limit, in most cases this is still high. North Carolina allows an 11-hour working day, Tennessee 10½ hours, Virginia, Kentucky, South Carolina, Georgia and Mississippi have 10-hour laws.¹³ With respect to state regulation of the working age and conditions of work of minors, the Southern States have also done relatively less than the Northern states.¹⁴

How far the recently enacted Federal Fair Labor Standards Act of 1938 will go in improving Southern conditions, is at the present time a matter of conjecture for the law has been in operation only since October 24, 1938. The reaction of the South can be expected to turn on three considerations. First is the number of industries brought under the law's jurisdiction. Since the law covers only workers who are employed in industries engaged in interstate commerce, it remains to be seen how many Southern industries will be so classified. A second factor is the enforcement of those provisions of the law prohibiting employment of children under 16 years of age in any occupation (with the exception of employment by a parent in any occupation other than manufacturing or mining), as well as the employment of children under 18 in hazardous occupations. And thirdly, there must be taken into account the minimum wage and maximum work-week actually established for employees engaged in interstate commerce.

The law provides for certain periodic increases in the minimum wage. In the first year, beginning October 24, 1938, the minimum is set at 25 cents per hour, for the next 6 years it is to be raised to 30 cents per hour, than after 7 years, the mini-

13 Women's Bureau, United States Department of Labor *Bulletin No. 137* (1936) Summary of State Hour Laws for Women and Minimum-Wage Rates. Cf. Report of National Emergency Council, pp. 40-44.

14 Children's Bureau, United States Department of Labor: A Summary of State Laws Affecting the Employment of Minors in Factories and Stores, September, 1936.

imum is to be 40 cents per hour. In the first year 44 hours per week are the maximum hours permitted, 42 hours in the second year, and 40 hours thereafter. Overtime is allowed only if workers are paid at one and one-half times the regular rates.

While the law appears to be quite rigid and inflexible in its application, some elasticity is introduced by allowing the Administrator of the law to prescribe lower minimum wages for learners, apprentices, messengers, and mentally and physically handicapped persons, and to set up industry committees whose function it will be to advise the Administrator when it is 'economically feasible' to raise the minimum rates without curtailing employment. They may also recommend 'reasonable' classifications within any industry for purposes of applying the minimum rates. In drawing up these classifications, the Administrator and the industry committees must consider (a) the competitive conditions as affected by transportation, living and production costs, (b) the wages established for work of labor of a comparable character by collective labor agreements; and (c) the wages paid by employers who voluntarily maintain minimum wage standards in the industry. Furthermore, classifications according to age or sex are prohibited.¹⁵

From what we know of wage-rate levels in the two regions, there can be no doubt that the law, if widely applied, will be of more serious consequence in the South than in the North. The reader will recall that the average hourly entrance rates of unskilled labor based on a 12-year period was barely over 30 cents per hour in the South, whereas in the North it was over 45 cents per hour. We have also seen that wages are more disparate in the South than in the North, a situation which would indicate that a relatively larger number of workers would be affected by the new legislation if it were applied to them. Moreover, the prohibition of lower minimum wages for women and minors will probably be of greater concern for the South than for the North, because of the peculiar composition

¹⁵ The provisions of the law are outlined in more detail in the *Monthly Labor Review*, July, 1938, pp. 107-112.

of the Southern labor supply.¹⁶ In sum, while it is impossible to gauge the effect of the new legislation at the present time, it is clear that the greatest obstacles in applying the law will appear in the South.¹⁷

The importance of different racial groups is another significant aspect of the composition of the labor supply. Although the percentage of the Negro population has been steadily declining in the South, in 1930 78.7 percent of the Negro population was still living in the South. This compares with 20.2 percent in the North and 1.1 percent in the West.¹⁸ It is sometimes suggested that since Negroes and white persons do not compete for the same jobs (that is, that there are so-called "White-men's jobs" and "Negro-jobs"), the existence of large numbers of Negroes has no effect on wages paid in places hiring only white workers. The narrow range of employment opportunities open to Negroes (primarily those in agriculture) increases the pressure for employment in these restricted occupations and thus tends to depress wages among Negro workers. The latter argument is probably true, but it is to be questioned whether Negroes have no effect on wages of white workers even though they do not actively compete for the same jobs, for the mere existence of a large reserve of Negro labor undoubtedly affects the supply price of white workers. It is for this reason that many students of Southern culture argue

¹⁶ See above, p. 154.

¹⁷ In this connection it is interesting to note the results of a survey conducted by the American Institute of Public Opinion headed by Dr. George Gallup reported in the *New York Times* of January 1, 1939, Section 1, page 10. The question asked of workers was: "Are you in favor of the new wages and hours law?" In New England, Middle Atlantic and West Central States, more than 75 per cent of those answering were in favor of the law, in the West, 73 per cent, and in the East Central, 66 per cent. For the South, only 59 per cent were in favor and 41 per cent against. If this survey of public opinion is accurate and representative, it would appear that a large number of Southern workers have some doubt as to whether the law will improve their economic status.

¹⁸ *Encyclopedia of the Social Sciences*, Vol. I, pp. 335-356, article on "The Negro Problem."

that much of the race prejudice in that region can be attributed to the fact that the Negroes stand as a threat to the economic security of the lower-class whites.¹⁹

The existence of large numbers of women, minors and Negroes in the Southern labor supply has a depressing effect on wages not only because of their numbers but also because they have traditionally occupied a relatively weak bargaining position (a condition which is not entirely disassociated from their numbers). This is true not only in the South but in the North as well, but it is intensified in the South because of the paucity of alternative opportunities for these groups, the pressure upon women and children to supplement family income,²⁰ the lack of state regulation of working conditions and the almost complete absence of protective union organization. The importance of these relatively weaker groups in the South may also account, in part, for the greater wage dispersion found in that area as compared to the North. For since their bargaining position is weaker and the restriction on their mobility greater than that of other workers of the same skill, wage discrimination may be employed without fear of labor retaliation. It may be possible, therefore, to pay lower wages to women, minors and Negroes without having these groups move to other places in order to avoid such discrimination nor is it likely that these groups, acting alone, will seek other forms of protection.

19 Dollard, J., *Caste and Class in a Southern Town*, Yale University Press, 1937, p. 131. This is frankly admitted in a recent survey. The National Emergency Council in its report to the President notes that "increasing competition for jobs has also upset the balance of employment between white and Negro. Unemployment among white people has caused them to seek jobs which were traditionally filled only by Negroes in the South. The field for the employment of Negroes has consequently been further restricted, causing greater migration. The lack of opportunity and the resulting job competition has lowered the living standards of both white and Negro workers in the South." *Op. cit.*, pp. 19-20.

20 The many cases, as indicated above (see Chapter VII, p. 137) the head of the family can get employment only on the condition that the other employable persons in the family are willing to work.

If relative income levels are so low in the South, why do the Southerners not move? The answer to this question is that they do move and have moved in large numbers. Professor Odum has shown that the "rural districts of the Southeast have exported about one-fourth of their population, have continued their own growth, and added much to the growth of the Southern cities and have sent about 3,500,000 to other regions."²¹ In spite of this large migration, the paradox remains that the South still represents "too many people in a region which is constantly complaining of its losses of millions of migrants to other regions of the nation."²²

Why the paradox? It would seem on *a priori* grounds that migration would be a welcome relief to an area where the population pressure is so intense. The paradox is resolved when the results of migration are considered. As Woofter has shown, migration tends to upset the age distribution of the population. The productive middle age groups are usually the migrants, leaving behind them the young and old, many of whom are unemployable and become subjects of relief. But more important is the fact that migration "exerts a selective drag on the talent of the region." It has been estimated that "45 percent of the eminent social scientists who were born in the South were living outside of the South, and 60 percent of the natural scientists. This selection of the most able and energetic doubtless extends all the way down the social scale." In other words, while migration may reduce the population in numbers it may at the same time reduce the efficiency of the remaining population by drawing off its most productive members.²³

²¹ *Op. cit.*, p. 463.

²² *Ibid.*, p. 89.

²³ Woofter, *op. cit.*, pp. 3-5. The question whether migration is selective in the sense that those who move are more efficient or enterprising or more intelligent than the non-migrants, is still a much debated question. Studies designed to test this hypothesis have been none too fruitful, largely because of the difficulties involved in obtaining adequate and relevant data. Klineberg, for example, argues that the superiority of Northern Negroes over Southern Negroes as indicated by intelligence and performance tests, depends more

We have come then to the important problem of regional differences in labor efficiency. Unfortunately, because of the paucity of information, nothing much can be said which would help to clarify this problem. Such data as do exist (e.g., studies on regional differences in labor productivity) are not only few in number and cover different periods of time, but they are also subject to two important limitations: (a) no distinction is made between the efficiency of workers due to their own abilities and the way in which the organization of work, technological methods and managerial ability affect labor productivity, and (b) there is practically no information bearing on the efficiency of workers doing identical jobs in different geographical regions.

In view of the fact that there are regional differences in wages, there is some presumption that these wage differences reflect differences in labor efficiency. Note, however, that this does not mean that the observed differences in wage rates between the North and the South measure exactly the differences in labor efficiency between the two regions. Nor does this suggest that whatever the difference in labor efficiency, the poorer showing of the South is the result of inherent physical or intellectual limitations of its population. On the contrary, the preceding discussion has pointed to those environmental handicaps which must inevitably place the South in a more unfavorable position compared to the North.

3. REGIONAL DIFFERENCES IN COMPETITION

The two preceding sections have discussed the influences bearing on the level of wages in the North and South from the sides of demand and of supply. We know, however, that even if the supply and marginal productivity of labor in the two regions were the same, differences in the state of competition for labor would, in view of imperfect labor mobility, cause

on differences in environmental conditioning and advancement opportunities in the North rather than on basic differences in intelligence. Klineberg, Otto, *Negro Intelligence and Selective Migration*, New York, Columbia University Press, 1935. Cf. also Thomas, D. S., *op. cit.*, pp. 141-159.

differences in wages to arise.²⁴ It is therefore necessary to examine those conditions in the two regions which are likely to affect the state of competition for labor.

In this connection three factors which cause competitive conditions and labor mobility to be different in the two regions have already been mentioned. To repeat, these are first, differences in the relative importance of certain groups of workers in the South (women, minors and Negroes); secondly, the limited amount of unionization in the South as compared to the North; and thirdly, the more highly developed system of state regulation of working conditions in the North. A fourth condition may now be added—the spatial characteristics of the labor market in the two regions. We shall first examine what these are, and then inquire as to their significance for the problem of wage differentials.

For this purpose, the categories of North and South are too broad and must be broken down into their component parts. For strictly speaking, a worker does not live in the North or in the South, but rather he lives or works in some locality within these areas. The type of locality and its nearness to other places of employment opportunities, will necessarily affect the conditions of competition for employment and the ease with which a worker can transfer from one job to another. From this point of view a region is an aggregate of different types of localities. The predominance of certain types and their relationship to each other are some of the elements that determine the organization of the labor market in the different regions.

What then, are the predominant types of localities in the North and in the South? We cannot do better than refer again to Creamer's study of the distribution of wage jobs in manufacturing industries in New England and in the South Atlantic States.²⁵ Seven types of industrial locations are here distinguished: A, principal cities of industrial areas; B, large satellite cities in industrial areas; C, remainder of industrial areas

²⁴ See Chapter VI, pp. 119-124, above.

²⁵ *Op. cit.*, pp. 316, 322, 326-7.

(or, industrial peripheries); D, cities of 100,000 or more inhabitants outside of industrial areas; E, remainder of the county in which D cities are located (or peripheries of D cities); F, important industrial counties without a city as large as 100,000 inhabitants and G, "all the rest" (or relatively small scattered towns and cities).

The first three types of locations (principal cities, satellite cities and industrial peripheries) may be grouped into what we shall call a 'major industrial county', a region of highly concentrated manufacturing activity. In 1899, 69.3 percent of all wage jobs in New England were found in counties of this type, as compared to only 23.0 percent of all wage jobs in the South Atlantic States. In New England, this proportion shows a continuous increase until 1931. Between 1931 and 1933 this percentage fell from 73.5 to 72.7 percent. In the South, the percentage of wage jobs in major industrial counties shows a steady decline. In 1919 it was 18.6 percent, in 1929, 15.6 percent, in 1931, 15.5 percent and in 1933, 14.3 percent. In other words, while employment opportunities became more concentrated in the North, the opposite trend can be observed in the South.²⁶

When the 'all the rest' category is examined more closely, the regional contrast is again apparent. In 1933, 11.9 percent of all wage jobs in New England were found in small towns and outlying communities compared to 58.1 percent for the South Atlantic States. Since 1899, the percentage of wage jobs in New England in these scattered towns and cities has been *decreasing* (it was 15.4 percent in 1899), whereas in the South, the percentage has been *increasing*, (it was 55.9 percent in

²⁶ This does not mean, of course, that manufacturing was being reduced in the major industrial counties in the South. On the contrary, during this period there was an increase on the total amount of Southern manufacturing both in large centers and in small towns and outlying communities. The changing proportions merely indicate that the distribution of industry within the region was shifting. It is this latter point which is the present concern, for while the general expansion in the South caused the general level of wages to rise, the decentralization of industry was a force making for greater wage dispersion.

1899). The distribution of wage jobs according to the size of cities indicates that in 1929, 44.5 percent of the wage jobs in the South were in small towns with under 10,000 inhabitants. For New England this percentage is only 8.6. Thus, not only are centers of employment opportunities more scattered in the South than in the North, but also they are smaller in size as measured by the number of inhabitants.

It seems reasonable to conclude from this survey, that the spatial characteristics of the South offer additional obstacles to movements of labor within the region. For one thing transportation costs are likely to be higher, the greater is the distance between jobs. In terms of a worker's prevailing level of income, the inducement to move (the differential in wages) would have to be larger than in an environment where costs of transportation are less important. Furthermore, the psychological resistances to movement are probably stronger where a family or an individual worker has to go a longer way in order to take advantage of some job opportunity. Thirdly, the peculiar living conditions in many small Southern communities would also have some deterrent effect on movement. Without going into detail on this point, it has been shown that people living on farms, or in company houses, or in company towns, find it more difficult to move than workers living in metropolitan communities. The factor of indebtedness plus all the inducements offered by employers to maintain their labor supply, are undoubtedly effective obstacles to mobility.²⁷

The ability of employers to reduce labor mobility also seems to vary with the size of the city in which they are operating. As suggested above, their control is probably greatest in company towns. This is borne out by the various studies by

²⁷ See above, Chapter VII. The effectiveness of mill villages in reducing migration is indicated by a recent study of the Alabama labor market. Cf. Morley, *op. cit.*, pp. 59-72. In this state, labor turnover seems to be smallest in textile manufacturing, where mill villages are important, high also in the forest product industries but small in the paper products industries. Industries in the large cities appear to have a higher turnover rate than industries located in small cities.

Daugherty in the iron and steel industry, Rhyne's study of textile mills in North Carolina, Morley's study of the Alabama labor market, and a recent study of certain mining and manufacturing communities in Allegheny County, Pennsylvania.²⁸ On the basis of this information, it would appear that there is an inverse relationship between the extent of an employer's control over his labor supply and the size of the community in which he operates; control decreases as the size of the community increases, and vice versa. The reasons for this relationship are perhaps obvious. Workers are less dependent on particular employers for jobs, relief, welfare, education, housing and stores for their purchases in the larger cities where these facilities are provided by other private or public agencies.

In sum, the evidence suggests that the industrial geography of the South is a contributing factor making for a more imperfect labor market in that region as compared to the North. This is indicated by the fact that labor is apparently less mobile, that employers appear to exert stronger controls over their labor supply in the South than in the North and that the range of alternative employment opportunities is smaller.

The differences between the North and South set out above have significance for our study in two different ways. First, they help to explain why wages are lower in the South than in the North. For if mobility between districts in the South is small, the employers (or employer) in each district can more easily deal with his labor in a monopolistic fashion. And secondly, the spatial characteristics of the Southern labor market help us understand why differences in wages within the South are greater than they are in the North.²⁹ Movements of workers from one district to another act to limit differences in wages. If, as indicated above, it is more difficult in the South than in the North for workers to move from employer to employer, this must be a powerful factor operating to enable relatively large differentials within the region to persist.

²⁸ Daugherty, C., *op. cit.*; Rhyne, J. J., *Southern Mill Villages*; Morley, *op. cit.*; Klein and others, *op. cit.*

²⁹ See above, pp. 160-163.

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